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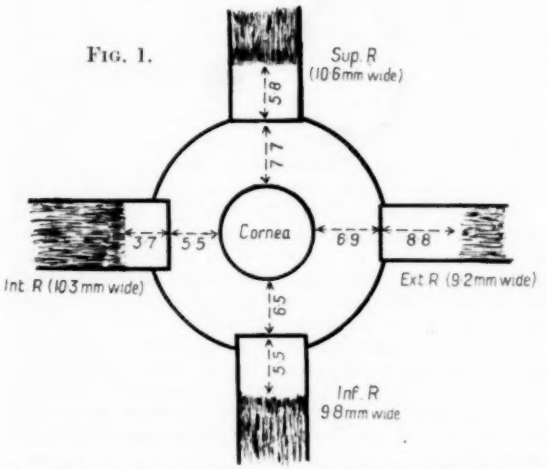
FOR the purpose I have in view it is hardly necessary to describe the extra-ocular muscles in anatomical detail. As far as their origin is concerned it is sufficient to remember that each of the four recti muscles arises at the apex of the orbit from the tendinous zonule of Zinn, which surrounds the optic foramen and crosses the inner and lower part of the superior orbital fissure. The superior oblique arises in the same immediate neighbourhood; its rounded fleshy belly passes forward in the angle formed by the roof and inner wall of the orbit to a tendon which plays in the trochlea attached to the orbital roof just behind the internal angular process; by means of its pulley the tendon makes a bend to pass downwards, backwards, and outwards at an angle of about 51 degrees with the sagittal axis and so reaches its insertion on the postero-external quadrant of the eyeball. The inferior oblique arises in a small depression in the

FIG. 1.

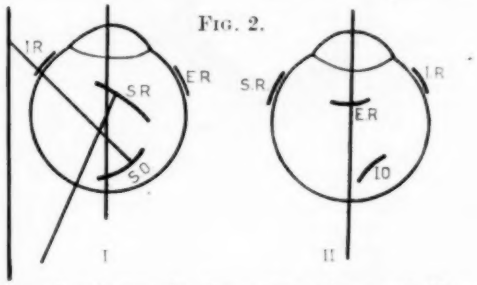


Scheme to show insertions of recti muscles with breadth and length of their tendons (after Whitnall).

orbital floor, immediately external to the naso-lacrymal groove; after passing beneath the globe and inferior rectus muscle it ascends to its insertion on the postero-external quadrant of the eyeball rather posterior to the attachment of the superior oblique, and therefore somewhat nearer to the optic nerve. The inferior oblique in its whole course makes the same angle with the inner wall of the orbit as the reflected tendon of the superior oblique and in lower vertebrates the superior oblique arises, like the inferior oblique, just behind the orbital outlet and thence passes directly to its insertion; the two muscles in such animals are much more obviously comparable than in the human subject they at first appear to be.

The outer wall of the orbit makes an angle of about 45 degrees with the inner wall, and in the primary position of the eyes at rest the visual axes are parallel to each other and directed straight forwards in the sagittal plane in alignment with the inner orbital walls. The combined length of its fleshy belly and tendon of insertion is approximately the same for each of the four recti muscles, but there are considerable differences in the length of their tendons; the fleshy bellies therefore differ not only in width but also in length and contractile capacity; in full contraction the muscular portion of each rectus shortens by about 25 per cent. The tendons, moreover, are attached

FIG. 2.



Insertion of ocular muscles (I) seen from above, and (II) seen from outer side (after Merkel).

at varying distances behind the sclerocorneal margin and lie in an irregular spiral (Figs. 1 and 2).

Fig. 1 applies to the recti muscles, and indicates the points in regard to their tendons and sites of insertion to which I have referred. Fig. 2 is introduced more particularly to show the attachments of the two obliques, and it will be observed that in the normal eye the posterior end of the superior oblique line of insertion transgresses on to the postero-internal segment of the globe.

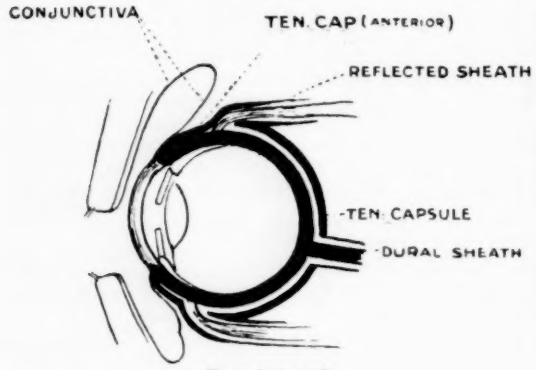
TENON'S CAPSULE.

Figs. 3 and 4 represent Tenon's capsule diagrammatically. The conception that in its movements the eyeball rotates within the cup formed by Tenon's capsule is of ancient date and difficult to eradicate from the mind; a very slight consideration of the anatomical arrangement of the capsule, however, shows it to be erroneous.

It is now certain that Tenon's capsule has no serous, or visceral, layer; it is a fibro-elastic membrane more dense posteriorly where it passes into continuity with the fibrous dural sheath of the optic nerve; anteriorly it is thinner and blends intimately with the deep surface of the ocular conjunctiva, and with it is attached to the globe at the sclerocorneal junction in the whole circumference of the limbus. Everywhere it is adherent by strands of loose episcleral tissue to the surface of the sclerotic coat. It is perforated posteriorly by the posterior ciliary vessels and nerves on their way to penetrate the sclerotic around the porus opticus; at the equator the venæ vorticosæ emerge through it, while in the ciliary area the anterior ciliary arteries and veins traverse it. Moreover, where the capsule is penetrated by the tendons of the extra-ocular muscles it sends a sheath along each tendon, which sheath passes into continuity with the perimysium; in the case of the superior oblique the sheath is traceable as far as the trochlea; off the sheath thus given to the recti muscles are reflected the check ligaments, by which over-action of the muscles

is prevented; the lateral check ligaments, passing respectively from the internal rectus to the vertical crest on the lacrymal bone behind the tear sac, and from the external rectus to the malar bone are better

FIG. 3.



Tenon's capsule.

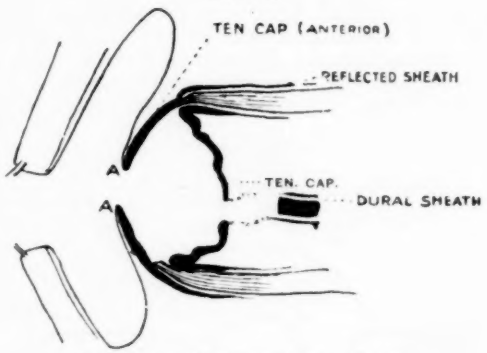
defined than those from the superior and inferior rectus which are directed forwards to the fornices of the conjunctival sac.

Bearing these facts in mind it is inconceivable that the eye can rotate as a ball within Tenon's capsule as a cup; were it to do so the whole intra-ocular circulation would be disturbed or the centripetal and centrifugal blood-vessels would be lacerated in any but the least movement, while the fibres of the optic nerve would be required to play freely up and down its dural sheath like a piston rod in its cylinder. The truth is that Tenon's fascia forms a primary bed in which the eyeball is ensconced, while globe and capsule move together upon the bed of fat, semi-fluid during life, with which the orbit is everywhere packed. The muscles of the eyeball are the only muscles of the body which enjoy the advantage of playing in an oleaginous lubricating medium; the precise results which they achieve show the orbit to be an ideal gear-box.

Nature and Production of Ocular Movements.

But not even on the cup of semi-fluid fat does the eye, ensheathed by Tenon's capsule, in the true sense of the word, rotate. In the first place, the eye is by no means a perfect sphere, and even if it be so regarded the point about which it moves is not its centre. Donders found this fixed point about which the eyeball moves to be 14·52 mm. behind the central point of the cornea in myopic eyes and 13·22 mm. in hypermetropic eyes. We may the better apprehend its situation if we locate it at 14 mm. as a rough mean for the emmetropic eye, remembering that the antero-posterior axis of such an eye measures 24 mm. All movement about this metacentral point should accordingly be regarded as an oscillation of the eye, not as a rotation. Unfortunately, the term rotation has become well entrenched. The terms rotation in or out, and up or down add to our confusion, and unnecessarily seeing that such terms as adduction, abduction, elevation and depression thought of in reference to the anterior pole of the eye are available, and ambiguous to no one. The use of these terms will leave the word rotation for a movement of the eye which never takes place in health when all the extra-ocular muscles are working normally. This potential rotation is a wheel-like movement on the antero-posterior axis; if it occurred and we imagine the eyeball as free to roll on the floor of the orbit and barrel-like in shape the term "rotation in" can be employed to describe the wheel-like movement which would cause the eye to travel towards the mid-line of the face, and the term "rotation out" for the wheel-like roll in the opposite direction; the terms "in-torsion" and "ex-torsion" have been used as alternatives, but suggest to my mind the idea of a corkscrew-like or spiral twist contorting the eyeball. Of the six extra-ocular muscles, when the eyes are in the primary position, which is the basal position from which to contemplate ocular movements, the lateral recti alone are in alignment with the movement which their contraction imparts to the eyeballs; the internal rectus is a pure adductor, the external rectus a pure abductor. The tendon of the superior oblique descends from the orbital roof, passes backwards and outwards over the top of the eye on the mesial side of the centre of movement to reach its scleral insertion near the posterior pole; its action is that of a depressor, an abductor, and an internal rotator; the inferior oblique, parallel in its course to the tendon of the superior oblique, but ascending from the floor of the orbit after having passed beneath the eyeball, is an elevator, an abductor, and an external rotator. The superior and inferior recti pass

FIG. 4.



Tenon's capsule after excision of eyeball.

forwards and outwards, making an angle of about 27 degrees with the sagittal plane, while the obliques make an angle of about 51 degrees with the same plane; the angle formed by the recti is a small one, but it enables the superior rectus to act as an adductor and internal rotator, the inferior rectus as an adductor and external rotator, though the chief function of the first is that of an elevator, of the second that of a depressor.

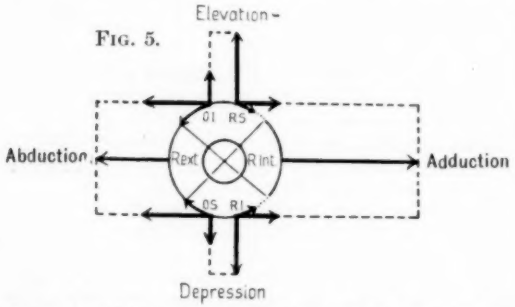
The scheme exhibited in Fig. 5 very ingeniously displays these muscular actions; in it variations in the length of the arrows are indicative of the amount of power in any direction which each muscle can contribute to the total required. The action of each muscle is set out in the Table; reference to it indicates

Superior rectus III. N.	Internal rectus III. N.	Inferior rectus III. N.	Inferior oblique III. N.	External rectus VI. N.	Superior oblique IV. N.
Adductor.	Adductor.	Adductor.	Elevator.	—	Depressor.
Internal rotator.	—	External rotator.	External rotator.	—	Internal rotator.
Elevator.	—	Depressor.	Abductor.	Abductor.	Abductor.

that in adduction of an eye, or in simultaneous convergence of the two eyes, as in near fixation, the

primary power is furnished by the internal rectus muscle, while precision and steadiness of movement are secured by simultaneous contraction of the superior and inferior recti, approaching their work as adductors not in the direct line of the movement to be imparted; the tendency of the one to elevate

FIG. 5.



Scheme to illustrate the action of the ocular muscles (after Marquez, from Fuchs).

the cornea will be neutralised by that of the other to depress it, while their individual capacities to produce wheel-like rotation on the antero-posterior axis will also cancel each other. It is interesting to note that each of these three muscles used in near fixation is innervated by the third cranial nerve, which supplies also the sphincter pupillæ and ciliary muscles called upon at the same time to adjust the focus of the eye for a near point. The abducting group of muscles will in convergence be acting as controls, and in turn preponderance will be given to them when required to restore the primary position of parallelism. How accurately the abducting group of one eye balances the adducting group of the other, and consequently also its own group of adductors, is demonstrated by the precision with which the two eyes can be lateralised to right or to left. Reference to Fig. 5 and to the Table again shows how the obliques supplement the pure abductor and mutually eliminate the tendency of one another to produce vertical movement or wheel-like rotation. In elevating the cornea the power is supplied by the superior rectus and the inferior oblique acting in conjunction; in depression the inferior rectus and the superior oblique form the pair of muscles to which preponderance is transmitted.

INNERVATION OF MUSCLES.

A study of the groups of nuclear nerve-cells in the fore part of the floor of the iter of Sylvius and posterior part of the floor of the third ventricle (Fig. 6) shows that the group for the superior rectus is in immediate contiguity with that for the inferior oblique, and that the group for the inferior rectus and the fourth nerve nucleus which innervates the superior oblique are in similar immediate anatomical relation to each other. In Fig. 6 it will be observed of the third nerve nucleus that only those fibres which arise from its posterior part and are destined for the supply of the inferior rectus decussate to form a bundle of the oculo-motor nerve of the opposite side; this arrangement obviously harmonises with the crossing, dorsally to the iter, of the two fourth nerves, which supply the superior obliques. The posterior longitudinal bundle passes ventrally to the successive nuclei and links them together, while fibres which cross the median raphe from each sixth nerve nucleus to the opposite third nerve nucleus are, no doubt, an essential part of the mechanism for conjugate lateral movements. Once again referring to Fig. 5 we observe how the quota of wheel-like movement and of adduction which the superior rectus would tend to produce is antagonised by the tendency of its associate in elevation, the inferior oblique, in the opposite direction, and similarly in the case of the combined depressors the inferior rectus and superior oblique. When the two elevators are in preponderance the two depressors are in action as controls, and vice versa.

HARMONY OF OCULAR MOVEMENTS.

If the advantages of binocular vision are to be available, and diplopia is to be avoided in all parts of the fixation field, the greatest precision of ocular movement is obviously essential; these advantages are preserved in the primary parallel position of the visual axes by the tone of the extraocular muscles; in all other positions by the precision and accuracy of their grouped working. Yet we constantly hear and read statements implying that adduction and convergence are effected by the internal recti, abduction by the external recti. No movement of any part of the body, I imagine, needs to be more precise than the convergence of the visual axes, such as is necessary to maintain the image of a needle eye or point on the fovea of each of our two

FIG. 6.

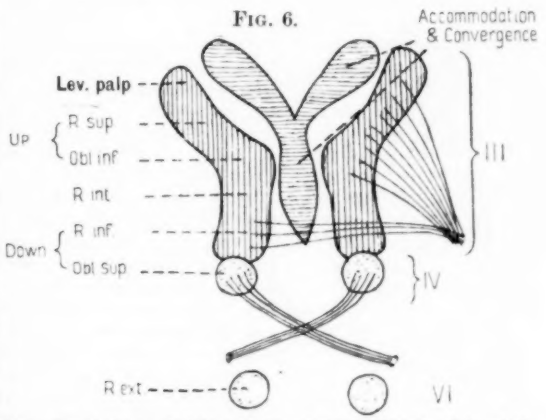


Diagram of the probable position of the nuclei of origin of the fibres to the ocular muscles in the IIIrd, IVth, and VIth nuclei (after Parsons).

eyes simultaneously. Two single strap-shaped muscles like the internal recti, operating in the direct line of the movement to be imparted to the eyeballs, could never effect this. The internal rectus, while it is the main antagonist of its fellow external rectus, is greatly its superior in power; we have already seen that it is the more bulky of the two muscles, that its fleshy belly is both the longer and the wider, and that by reason of the more anterior insertion of its tendon in relation to the centre of movement it acts at greater leverage advantage than the external rectus. If we ignore the accessory adductors and abductors we are faced with the following paradox—viz., that if for an external concomitant strabismus a surgeon tenotomises the external rectus, and on the hypothesis leaves the powerful and powerfully attached internal rectus unopposed, he can correct by his operation only about 5 degrees of the squint; on the other hand, if for the treatment of an internal concomitant strabismus he tenotomises the internal rectus and leaves the far weaker external rectus unopposed, he can correct as much as 15 degrees of squint.

The total power of abducting the eye must be equal to the total power of adducting it; the total power of elevation must be equal to the total power

of depression; potential power of wheel-like movement in (rotation in) must cancel potential power of wheel-like movement out (rotation out). The power of abduction of the external rectus supplemented by the accessory power provided by the combined action of the two obliques must be equal to the power of adduction of the internal rectus supplemented by the accessory power of the combined action of the superior and inferior recti. The external rectus being a weaker muscle than the internal rectus, the obliques contribute more to abduction than the vertical recti to adduction, and the necessary balance is achieved. Were it not so life would be intolerable from confusion of vision and the discomforts which ocular strain would induce. We now see that when the external rectus is tenotomised the adducting group is still considerably opposed by the accessory abductors; when the internal rectus is tenotomised the abducting group is opposed only by the accessory adductors, a much weaker pair of muscles for adduction than the oblique pair for abduction. Our operative experience therefore agrees with what we would expect. The angles in Fig. 7 themselves suggest this inferiority of the supplementary adductors to the supplementary abductors; the angle α which the vertical recti make with the sagittal plane is 27 degrees, while the angle β of the obliques is 51 degrees; approaching their work as abductors at a greater angle than do the recti their work as adductors the obliques would clearly be expected to be the more powerful of the two accessory pairs for lateral movement. The total excursion of the eyeball from the position of rest is about 45 degrees in every direction; when adduction has been started the obliques begin to lose power as abductors, while the vertical recti progressively approach their work as adductors more advantageously, and vice versa—if the eye be lateralised 27 degrees in the direction of the outer canthus the superior rectus is reduced to a pure elevator, the inferior rectus to a pure depressor; if the eye could be adducted 51 degrees the obliques would become a pure depressor and a pure elevator respectively. The rotation values of all these muscles will also vary with the lateral position of the cornea. There is evidence that the lateral recti also, as one would expect, acquire rotation power when the eye is directed into the upper or the lower part of the fixation field; if the external rectus is paralysed the false image remains erect only as long as the eyes are kept in the horizontal plane, or the paralysed muscle is not actively called upon; a tilting of the false image occurs when the paralysed external rectus is required to assist in turning the eye either upwards and outwards, or downwards and outwards; a slight wheel-like movement of the eye has been produced by the oblique muscle concerned in these positions when the opposing wheel-like contribution of the external rectus is absent by reason of its paralysis. It would also seem that when the cornea has risen above the horizontal level as the eye is elevated the two lateral recti in combination begin to contribute to the power of elevation, and conversely, that they will become supplementary depressors when downward movement has been initiated by the inferior rectus and the superior oblique.

We are now able to realise that even in the primary position of rest there is no extra-ocular muscle which is not by its tone essential to maintain the balance of the eye with which it is immediately concerned, and the harmony of that eye with its fellow. There can, in my opinion, be no movement in any direction imparted to an eyeball in which everyone of its extra-ocular muscles is not implicated, either as an active power or as a controlling influence. Marvellous indeed must be that musculature when we reflect that two eyes have to make excursions in complete harmony to every part of the field and at constantly changing range of fixation, and still more mysterious the physiological mechanism by which this musculature is called into active operation, whether it be regarded as a subconscious reflex or as a volitional performance.

Concomitant Strabismus.

Donder's theory as to the production of convergent concomitant strabismus in hypermetropic eyes is accepted almost universally as a sufficient explanation of the disorder. It is based on the physiological association of the effort of accommodation with the act of convergence in the emmetropic eye; the hypermetrope, if he is to obtain on his retina sharply defined images of objects at a remote distance, must needs use his ciliary muscles, but must dissociate their activity from the convergence of the visual axes with which the act of accommodation would, under normal conditions of focus, be inevitably associated; failure to accomplish this dissociation must result in convergent strabismus, one eye becoming the eye fixing the object under contemplation, the other converging at the appropriate angle and its vision being suppressed in order to avoid diplopia. That eye will unconsciously be selected as the converging one which for any reason is the less effective of the two for vision; this it may be through its being the subject of a more gross or more complicated error of focus than its fellow, or by some defect of transparency in its media or deficiency or disorder in its percipient elements.

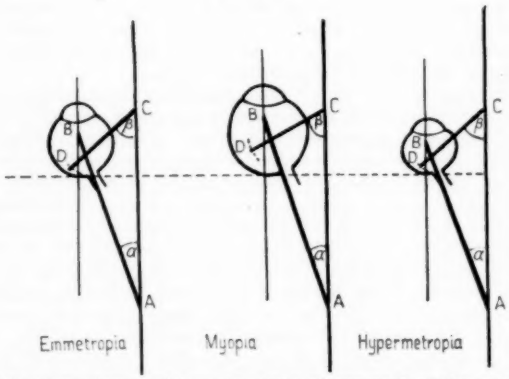
The conception of a higher fusion centre in the brain may be a convenient assumption for the purpose of discussing unsolved problems, but in my judgment can be no more than this. Among all the injuries and diseases of the brain on record, I am unaware of any case in which a patient as the result of a local cerebral lesion has lost the power of stereoscopic vision without other disturbance of visual function; a series of such cases would be necessary to demonstrate the presence and situation of the "fusion centre" if it exists anywhere but in the brains of those who postulate it.

Donder's theory, however, does not go entirely unchallenged, and does not fully satisfy in all respects every case of convergent concomitant strabismus, while its insufficiency as an interpretation of divergent concomitant strabismus in myopes is still more conspicuous. It is stated that if we regard divergence as negative convergence, the association of divergent strabismus with myopia is explicable on Donder's theory, but this statement has, I feel sure, never carried full conviction to the mind of anyone who has seriously considered it.

While the absence of the necessity for full or any accommodative effort on the part of the myope to enable him to define an object at short range may deprive him of an incentive to the associated action of convergence, it seems to me to afford no explanation of the visual axes taking up a primary position of divergence instead of parallelism in the myope; in viewing, or attempting to view, a distant object neither the emmetrope nor the myope is making any effort with his ciliary muscles. It would seem unlikely, a priori, that the convergence muscles in myopic eyes weaken from disuse, seeing that the myope usually indulges excessively in work at short ranges, for which he considers his eyes particularly efficient, while occupations which require a full range of

distant vision necessarily interest him but little. It is suggested that in the higher degrees of myopia the cumbrous elongated eyeballs are accommodated more conveniently in the orbits, if each swings outwards to take up alignment with its orbital axis. This I think is approaching a point of some importance, but it is not to be understood that the myopic eyes volitionally take up this position of convenience; there is, I maintain, an anatomical reason quite adequate to explain a tendency to outward deviation on the part of the myopic eye. Fig. 7 supplies the solution. The emmetropic eye becomes myopic by stretching, but it is in the antero-posterior diameter particularly that enlargement occurs; the addition to length is made mainly by yielding in the posterior half of the globe and a tendency to a local bulge at the posterior pole is the chief contributory factor. The deformed eye is supported on the retro-ocular fat at the same depth in the orbit as it occupied before it started to become

FIG. 7.



Scheme to show variations in angles of approach of the extra-ocular muscles, determined by differences of refraction.

myopic; accordingly the myopic eye is prominent, and in high degrees of myopia so much so that it may suggest a proptosis. The result of the altered conditions will be that the angle BAC (Fig. 7) is diminished, while the angle ACD is increased; in consequence the power of the superior and inferior recti to act in combination as accessory adductors is diminished, while that of the two obliques to act as accessory abductors is increased—the balance of power between the adducting and the abducting groups of muscles is therefore disturbed in favour of the abductors, and once an outward swing of the visual axis has been initiated the power of the accessory abductors increases while that of the accessory adductors decreases with every degree of outward deviation which is achieved, so that as soon as a preponderance of the abducting group has been established it tends automatically to increase. Even the proptosed emmetropic eyes of a patient suffering from exophthalmic goitre are frequently found to be incapable of maintaining efficient convergence; it seems to me probable that the explanation of this symptom of Graves's disease is to be found in the anatomical derangement of power, which the proptosis has produced between the adducting and abducting groups of extra-ocular muscles.

That in the myopic eye the superior oblique does approach its work more transversely and therefore at greater advantage to act as an abductor is strongly supported by the well-known observations of Fuchs on the insertions of the external muscles of the eye. Fuchs found that in the myopic eye the tendinous insertion line of the superior oblique is directed more antero-posteriorly than in the emmetropic or the hypermetropic eye, and that in the myopic eye its posterior limit does not cross the mid-sagittal plane of the eyeball, so that the whole of the line of insertion is confined to the postero-external quandrant of the globe.

It appears, therefore, that in the myope, in whom the balance of power is anatomically disturbed in favour of the abductors, parallelism of the two eyes as the primary position of rest can be obtained and maintained only if active nerve impulses inciting to contraction are constantly imparted to the adducting group; the incentive to these unwonted impulses will never be strong seeing that the call for them is non-physiological; the images of distant objects obtained by uncorrected myopic eyes are indistinct and easy to be ignored, so that avoidance of conscious diplopia is easy, while if one eye from any cause fails to contribute a practical share to binocular vision the position of greatest comfort will be assumed—i.e., a divergent strabismus will become established. In the flattened hypermetropic eye, where Donder's theory is more satisfying, consideration of Fig. 7 suggests that the changes in the muscular angles will be exactly the reverse of those which occur in the myopic eye—in the hypermetropic eye the balance of power is upset in favour of the adducting group, and I see no reason for entirely ignoring this fact in the consideration of convergent concomitant strabismus.

The position may be summed up concisely as follows. The simultaneous harmonised use of the focusing muscles with the adductors is a natural physiological function. If the hypermetrope fails to acquire the habit of accommodating without innervating his adductors a convergent strabismus results; if the myope cannot succeed in innervating his adductors without the stimulus which accommodation would supply a divergent strabismus results; anatomical disturbance of the extra-ocular muscles is a factor in each variety of concomitant strabismus, and especially conspicuous and primary in the case of the myope. Our operative treatment of concomitant strabismus is logical only if we concede that anatomical derangement is one of the chief elements in its production.

Ocular Contributions to Equilibrium.

Visual judgments and information derived from impulses generated in the extra-ocular muscles are elements which contribute to our sense of equilibrium. A picture of everything in the field of vision is formed on each retina simultaneously, and the image of each object in the field is projected outwards along the secondary axis passing through the nodal point of the eye to its correct position in space. Our visual appreciation of their relation to one another of the objects in space by which we are surrounded is known as objective orientation. In men and primates which enjoy the advantages of stereoscopic binocular vision, accuracy of alignment of the two eyes dependent on their perfect muscle balance is essential, or the information derived from one eye will contradict, not supplement, that derived from the other; in consequence the diplopia and false judgments will be so disturbing that the patient will prefer to close one eye and depend upon such restricted information as he can obtain by monocular vision. Objective orientation, then, is a purely visual function operative only when retinal stimuli influence consciousness as highly organised visual perceptions; as far therefore as

it is contributory to our sense of position and equilibrium it differs from articular and muscular sense, and from the guidance which we derive from the semicircular canals; these stimuli acting subconsciously are not under volitional control, and except during natural or artificial sleep are at all times operative. Assuming that we have a correct sense of body balance, and of the position of the head, it is however also necessary that our external eye muscles shall be accurately coördinated if by the sense of sight we are to estimate our personal relationship to objects in the world around us. By the muscular sense of our extra-ocular muscles we learn, subconsciously, the position of our eyes in our heads, and their alignment in regard to external objects; this is what is meant by the term subjective orientation, disorder of which function results in false judgment of our own position and a sense of want of balance or giddiness which is not experienced as the result of the conscious processes which constitute false objective orientation, or as it is sometimes called false projection. If the balance of our eye muscles is disarranged we must inevitably draw erroneous inferences, because, unknown to us, the premisses are false, while if definite ophthalmoplegia externa be present diplopia from false projection will complete our confusion.

The relation between the values of objective and subjective orientation is interesting. Occasionally a patient is met with who having developed paralysis of a muscle—e.g., the external rectus in his better seeing eye—still prefers to employ this eye and avoids diplopia by covering the non-paralysed eye of less visual acuity. If this has been his habit for any length of time testing will reveal that the patient is the subject of confused judgments when made to use the non-paralysed eye alone, and he walks unsteadily if he attempts to guide himself with this eye. Presumably he has established a new sense of values for the musculature in the interest of his paralysed eye. The existence of such cases suggests that the eye plays only a subsidiary part in the maintenance of equilibrium; a patient who has totally lost one eye experiences no sense of vertigo, and it appears to be not difficult to learn to use one eye for guiding our movements, even when its musculature is in a state of disorder. Nevertheless objective and more conspicuously subjective orientation do play a part in the maintenance of balance. Romberg's test is applied to tabetics with their eyes closed; if allowed to have his eyes in use a tabetic is able by visual judgments to nullify his tendency to sway when standing on a small base; on the other hand, any vertigo of purely ocular origin is relieved by closing the eyes. Labyrinthine nystagmus or the clonic spasm of compositor's nystagmus cause stationary objects to appear to be in oscillation. Labyrinthine nystagmus results from disordered influences generated in the semicircular canals; transmitted by the vestibular nerve these stimuli reach a group of neurons laterally placed in the upper part of the floor of the fourth ventricle, known as Deiter's nucleus, whence they are reflected along the nerves to the extra-ocular muscles. The cells of Deiter's nucleus are connected through the spinal cord and peripheral nerves with the skeletal muscles and receiving from them proprioceptive impulses dependent on their tone and muscular sense relay them to the cerebellum for the promotion of body balance. The nucleus is also put into communication by the posterior longitudinal bundle with the nuclei of origin of the third, fourth, and sixth nerves, particularly with those of the opposite side, though also with those of its own side. It is therefore reasonable to suppose that the extra-ocular muscles like other skeletal muscles contribute their quota of stimulus to the cerebellar centres via Deiter's nucleus, and that in a state of disorder they may help in this way to provoke a sense of vertigo; such an explanation might apply to the giddiness of insular sclerosis when nystagmus or diplopia are present. It has recently been suggested that the proprioceptive impulses generated in the extra-ocular muscles are transmitted through the third nerve, then by the communications which this nerve makes in the outer wall of the cavernous sinus to the fifth nerve, and thus to the nuclear cells of the brain stem. Clinical evidence, however, seems to support the view that the route is direct throughout by the third nerve. Where the Gasserian ganglion has been destroyed by disease, surgically excised, or its large sensory root cut behind the petrous bone, the patient, as far as I am aware, experiences no sense of want of balance or disturbance of his visual judgments. The schoolboy trick of bending the head on top of a cricket stump and whirling round it several times produces a sense of intense giddiness—this, of course, is mainly due to the semicircular canals, but the vertigo is more severe if the whirling is performed with the eyes open than it is if they are closed; disorder of ocular muscles is then produced and its effects are added to those of labyrinthine origin.

Disorders of the semicircular canals, vestibular nerve, or cerebellum produce a conscious vertigo, but vertiginous movements can be produced experimentally through these routes in a decerebrate animal. The special sense of vision can operate only as a higher mental perception; as such it can, if working normally, compensate for a lack of general muscular coördination or even control a vertigo, while if acting abnormally it aggravates a vertigo by the false information which it supplies. Disorder in the coördination of the extra-ocular muscles may reflexly influence the cerebellum and thus give rise to a perceived vertigo of low intensity, which may be further aggravated by the conflicting visual judgments. Accurate visual judgments may serve to arbitrate when the stimuli from other sources necessary to equilibrium are inharmonious, and may thereby suppress any sense of vertigo; apart from disorder of the ocular muscles the sense of sight will not itself produce any appreciation of true giddiness. Neither the sense of sight nor information from the ocular muscles is essential for the maintenance of equilibrium. Abnormal visual impulses generated in a disordered retina will produce no sense of vertigo if they are normally transmitted to and projected on the sensorium, though they may disturb visual impressions owing to metamorphopsia.

Visual Judgments in Sport.

A very simple form of visual judgment is called for in rifle shooting at the butts. The range being known, the sights of the weapon are adjusted for the required distance. Ignoring the question of making any allowance for deflection of the bullet by air currents, the marksman, rapidly adjusting his accommodation, has now but to ascertain with one eye (the right if he shoots from his right shoulder) that the bull, his foresight, and backsight are in one straight line, and if he accomplishes this and is sufficiently expert to maintain an accurate weapon in this position while he pulls his trigger a bull's-eye must result. By reason of his capacity rapidly to exercise a large amplitude of accommodation the younger man has an advantage over the older, but a very emmetropic eye is hardly an essential.

In the very early days of flying a patient came to me who was building his own aeroplane; if it turned out a

success it was his intention to fly it at the second meeting ever held in Great Britain. He was the subject of 6·0 D. of astigmatism and had never worn any correcting lenses. He told me he was absolutely accurate in detecting any departure from truth when he looked along the edge of a spar in course of preparation in his workshop. His joiner invariably confirmed his observation when he applied a straight edge at the point he indicated. No doubt his capacity in this matter was exceptional, as such an edge when focused by his astigmatic eye would be to him a particularly hard line in contrast with the very blurred definition of everything at right angles to it. I prescribed correcting cylinder lenses for the astigmatism, but advised my patient on no account to fly in them; the definition he would have obtained would, I felt sure, so disturb his accustomed judgments of distance that he would have made a false landing probably with disastrous results. This was his second plane. His first, at the urgent request of his relations, he had tried on his chauffeur, warning him only to taxi along the ground, and at once to shut off the engine if he did feel her lift off the ground, a thing at that early date practically unknown at the first attempt. So successful had he been, however, that the machine rose 40 feet into the air after a very short run, whereupon his chauffeur shut off the engine and smashed up the plane at a cost of some material injuries to himself and £2000 to his employer.

By the present date it has been recognised that perfection in the balance of the extra-ocular muscles is desirable in air pilots, and careful tests to exclude heterophoria are made of the eyes of candidates for the Air Force before they are accepted for training. It has been established by statistics that pilots who are the subject of heterophoria make bad landings, due to their imperfect capacity to estimate their height by vision. Practice and experience may, however, do much to compensate for visual deficiency.

A patient of mine who was an officer in the Royal Naval Air Service lost the central vision and upper part of the field of vision of his right eye by reason of a retinal detachment; though his position in the service no longer required him to do so, he continued to indulge himself in the pleasure of piloting machines, and had no particular difficulty in making good descents whether on to land or to water.

One of the leading professional billiard players of the last generation had a right eye which was highly amblyopic as it had squinted inwards when he was a boy; its central vision was less than 6/60; his left eye had full vision and he demonstrated to me his attitude when playing his shots at billiards. Being a right-handed player he took up such a position as enabled him to look along the line of his shot with his left eye—to do this he kept his eyes fully lateralised to the left. By much practice and making full use of the advantages of simultaneous contrast of light and shade he must have judged distances with an accuracy quite exceptional for one to whom stereoscopic vision was denied. A billiard player, fully equipped with vision, makes his bridge and adjusts his cue on it, for the shot he has selected, with the help of sight, but at the moment of delivering his stroke his eyes are fixed on that portion of the object ball with which he intends the cue ball to make contact; by long practice he has acquired the capacity by tactile sense and muscular sense alone to operate his cue, once he has it in position, with the required accuracy.

I believe the process to be similar in game shooting with a shot gun. In shooting at driven game or rabbits the experienced shot estimates binocularly the position and range of the object, and has little or no time to align his gun by the help of vision, using his right eye if it is from his right shoulder that he shoots. I learn from treatises on shooting that the expert shoots with both his eyes open; that he does not know how he aims; that he should not dwell on his game or follow it with his barrel but learn to drop it as soon as his gun comes to his shoulder; moreover, seeing that to kill properly he has to shoot ahead of his bird he has no actual object on which to align his weapon by sight even if he wished to do so. The truth is that the sportsman judges by vision the position at which he anticipates his charge of shot will intercept the head of his bird, and by practice becomes expert in pointing his gun to that position, guiding himself by the articular and muscular sense of his arms. He really does not sight his gun at all. The American is an expert at snap shooting with a revolver. I am informed that it is his habit to point at his mark with the first finger of the hand in which he holds his weapon extended parallel with the line of his barrel and to pull the trigger with his second finger. He no doubt keeps his eyes fixed on the target, not uncommonly his armed antagonist, and supplements usefully such rapid visual judgments as he makes by the joint and muscular sense of his upper limb and its index-finger. The idea of the master eye is, I believe, a fallacy but one found very useful by the gunsmith. A man who has been shooting badly is asked by his gunmaker to point a gun at a certain mark some yards away; when he has done this the tradesman, looking along the barrel, finds that it is directed, say, to the left of the mark, and informs him that his left is his master eye; the gun is, of course, actually being pointed too much in the line of vision of the right eye and too little in that of the left; a cast-off gun is recommended, made and sold, and with it its owner makes better shooting. He is, of course, sighting the new gun no more and no less than he was the old one, but bringing it to his shoulder, guided by proprioceptive impulses, exactly as he did the former weapon the "cast-off" results in his charge of shot being thrown more to the right and better results are obtained. If he did as a matter of fact sight his new gun he would be looking along a barrel straight from breech to muzzle, and as far as vision is concerned the fact that the barrel was set at an angle to the stock could make no difference at all. What had gone wrong with the man was that he had gradually and imperceptibly to himself lost accuracy in coördinating his upper limb movements when bringing his gun to his shoulder, so that he was not, subconsciously, pointing it to the position upon which both his eyes were fixed, and to which he believed himself to be directing it. Master eyes are not invoked to explain bad billiards, and except in Gilbertian opera a cast-off cue is not suggested as an advantage to anyone playing the game and then only if it be in the hands of his opponent.

To be reduced to one eye is, however, a great disadvantage in judging the position and distance of an object, and in this respect is an impediment to good shooting. A patient from whom I had excised one eye told me that on one occasion when a gnat buzzed a yard or so beyond the end of the muzzle of his gun he only just refrained from firing: the insect subtended an angle similar to that of a bird at a range of perhaps 30 yards and he had thought it to be a partridge. In 1923 I extracted a secondary cyclitic cataract from the left eye of a man, 42 years of age; his right eye was a soft shrunken eye which had been useless all his life, deviated outwards, and for vision had barely perception of light. The eye upon which I operated did very well, and was corrected for distance by +13·5 D. spherical, with which it saw 6/5 well, and even some letters of 6/4. I saw this man two and a half years later and was surprised when he told me that he had been successfully shooting both pheasants and rabbits. He had, of course, never enjoyed the advanatge of binocular visual judgments, but his capacity with an aphakic left eye, statically corrected with a strong convex lens, leads one to think that for the pointing of a shot-gun trained tactile and muscular sense are the chief requirements, while sight

is used to judge the range and position of the mark upon which the vision is kept fixed. Certain occupations and sports involve the use not only of the muscles of the arms but also of all the big muscles of the trunk and lower limbs. In many of these instances accuracy of impact between the implement employed and the object to be struck has to be secured as the primary necessity. For such vigorous and difficult work the sense of vision is all important; no amount of muscular and tactile sense alone could be trained adequately to secure the precision demanded. When a navvy is using a sledge hammer on a steel wedge to break up a road foundation, having measured his distance he never takes his eyes off the top of the wedge as he swings his hammer and he never misses his mark. The sense of sight is essential in hitting a golf ball; all the big muscles of the body are called into play in the swing and the eye must never be taken off the ball, preferably the back of the ball; only if guided by vision can accuracy of impact between the face of the club and the ball be secured in so violent a movement. Similar visual guidance is essential for successful goal kicking at Rugby football. In cricket and lawn tennis, though the implements are bigger than in golf, the ball should be received on the middle of the bat or racket, while there is the additional difficulty that the ball is in rapid movement; in each of these games the ball, approaching the player at considerable velocity and liable to spin or swerve in its progress, has to be watched by the player's eyes on to his bat or racket from the moment it is delivered by his opponent, or his reply will be futile. The player does well to restrain the vigour of his muscular efforts at the outset; this is the process known as "getting his eye in," but its essence consists in establishing subconscious concord between his muscular efforts and his visual judgments. Sir James Barrie once narrated that he had twice played cricket and told us "that on the first occasion he made one run, but on the second he was less successful." Sir John Bland-Sutton, in his last book not only confesses his incapacity as a batsman, but being a scientific man is able to give the correct explanation of his failure; he states "that he could not avoid shutting his eyes when trying to hit a moving ball." It is noteworthy that in his early days Sir John had worked with George Critchett, and, fascinated with his manual dexterity, had so seriously contemplated becoming an ophthalmic surgeon that with Fuchs he studied for a year in Arlt's clinic in Vienna. Ophthalmology was a great loser, but this college gained much when he decided to devote his life to pathology and the science and art of general surgery.

It will be observed that I have not been discussing *how* the eye operates in guiding muscular efforts. To do this would involve not only physiological considerations, but also others which are psychological and metaphysical, seeing that concepts of time and space are involved. We should be launching on a large uncharted sea if I endeavoured to extend my observations in any of these directions.

Importance of Sight.

If anyone should accuse me of having dealt with a subject not immediately bearing on surgery, I would point out that vision and the function of the eyes is the paramount sense by which all science has been evolved. Prof. Abel Rey, of the Sorbonne, in a book published this year in Paris in the "Evolution of Humanity" series gives a comprehensive study of oriental science before the Hellenic period. After reviewing all that was known of mathematics, astronomy, and medicine by Chaldeans, Assyrians, Chinese, Indians, and Egyptians, he sums up his conclusions. According to Prof. Rey it is owing to the development of the sense of sight that man has attained to his supremacy in the animal world. The senses of smell, of hearing, of touch could never have sufficed or been elaborated to enable man to form any ideas of notation, of mensuration, mathematics, or any branch of science as we know it to-day; in many of the lower animals one or more of these other special senses is far more acute than in the human subject. The development of the neopallium is the great characteristic of the brain of man; to it have been transferred and in it have been elaborated functions hitherto performed at a much more lowly level in mid-brain nuclei; the large areas of cerebral cortex devoted to vision, visual memory, and ocular movements are anatomical confirmation of Prof. Rey's philosophical deductions. Vision, he says, is the scientific sense par excellence; human experience is in great part visual; would it be an exaggeration, he asks, to say that experience which is, or tends to be, scientific is entirely visual? No apology therefore need, I trust, be offered by anyone who is inclined to meditate on the function of the eyes.

THE MEDICAL TREATMENT OF ANTHRAX.

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The report of the Chief Inspector of Factories for 1929 shows that excision of a "malignant pustule" is still practised in this country. A comparison between this method and the purely medical treatment of cutaneous anthrax may therefore be serviceable. The cases here reviewed have all occurred in the same district and are, as nearly as may be, similar in occupation, site, and severity of infection.

Before proceeding to discuss these cases in detail, it may be of interest to give a short historical account of the methods of medical treatment which are now employed.

Serotherapy.—The use of large doses of anti-anthrax serum was first practised by Bandi, who published the results in two cases. One of these patients had become comatose after surgical treatment. An intravenous dose of 150 c.cm. of serum, followed later in the day by a further 50 c.cm. by the same route, was so successful that, after a further 40 c.cm. on the following day, the patient recovered. However, serum in large doses intravenously does not seem to have been employed again until Eichhorn, in 1919, recommended it in doses of 200 to 300 c.cm. every three to six hours in cases of anthrax septicæmia. From 1920 onwards Regan, Santee, Symmers, and others took the view that every case should be suspected as septicæmia from the outset, and 200 c.cm. of serum became with them a usual preliminary dose, combined with local injections of 10 c.cm. of serum every four hours, applied just outside the blanched zone of the lesion.

In this country Eurich and Hodgson have used doses of 80 c.cm. and upwards, and the latter now advises a dose of 150 to 300 c.cm. as a preliminary, repeated as may be necessary until the temperature falls to normal. Symmers has used a total of 1100 c.cm. in one case, and Hodgson has found it necessary to exceed this dosage. Eurich, on the other hand, has

never needed to use more than 300 c.cm. in any case occurring in the wool industry.

Chemotherapy.—Ehrlich suggested that salvarsan might be usefully employed in these cases, and Eurich and Becker adopted this suggestion with good results, either with or without serum as additional treatment. Eurich and Pijper have also used neosalvarsan with success, and both advocate full doses (0·6 to 0·9 g.). In one case Pijper gave 0·9 g. daily for three successive days and a fourth dose after a week's interval, making a total of 3·6 g., equivalent to about 10 gr. of white arsenic. The patient was cured. Smaller doses have, in my very limited experience, been useless by themselves, though as an adjunct they appear to have some value, in single or double doses.

Local treatment by injection of 10 c.cm. of serum every four hours around the "pustule" is practised with excellent results by Regan, Santee, and Symmers, and the latter advocates the use of no other local treatment, believing that a sterile dressing is all that is necessary. Most writers, however, advise an antiseptic dressing. Eurich lays great stress on the importance of immobilisation, which is also used as a part of Pijper's routine.

Medical versus Surgical Treatment.

At the commencement of 1929 surgical measures at the Warrington Infirmary were abandoned; even the use of local antiseptic dressings was discontinued. This course was followed in the hope that general treatment could be stopped when bacilli were no longer found in the original lesion. It was supposed that if bacilli disappeared from the "pustule" then, even if the temperature was still raised, the further use of expensive doses of serum would be unnecessary and could be discontinued. The same applied to the use of organic arsenic and its attendant danger.

The results are of interest and are set out later. A short comparison of surgical and medical treatment is given in Tables I. and II. By courtesy of my surgical colleagues I am enabled to publish the results of surgical treatment (combined with serum) in 1927 and 1928 (Table I.). Table II. shows the results of medical treatment from the end of 1928 to the time of writing.

TABLE I

Cases Treated Surgically, 1927–28.

Case.	Sex and age.	Site of lesion.	Days in hosp.	Result.
1	M. 31	Back of neck.	16	Cured.
2	M. 66	Right cheek.	32	,,
3	M. 47	Right arm.	45	,,
4	M. 25	Right arm.	23	,,
5	M. 36	Left eyelid.	62	,,
6	M. 36	Left neck.	40	,,
7	M. 56	Left neck.	4	Died.
8	M. 27	Left neck.	24	Cured.
9	F. 37	†	4	Died.†
10	M. 43	Right arm.	21	Cured.
11	M. 54	Right neck.	5	Died.†

† Died in coma.
Average time in hospital of cured cases: 32·8 days.

TABLE II.

Cases Treated Medically, 1929–30.

Sex and age.	Site of lesion.	Days in hosp.	Result.
M. 35	Left eyelid.	13	Cured.
M. 26	Left neck.	10	,,
M. 52	Left cheek.	7	,,
M. 61	Left neck.	8	,,*
M. 21	Back of neck.	8	,,
M. 41	Right eyelid.	4	Died.†
F. 36	Right cheek.	3	,,†
M. 22	Left jaw.	9	Cured.
M. 16	Left cheek.	5	,,
M. 33	Right forearm.	12	,,
M. 56	Right chin.	8	,,

* Died six weeks later of exfoliative dermatitis.
Average time in hospital of cured cases: 9 days.

Fifteen of the twenty-two cases occurred in the season December to May inclusive. The Chief Inspector of Factories was communicated with on this point, and by his courtesy I am permitted to publish the following extract from his reply: "Curiously enough, I have been looking into the matter myself, and in the five years 1925 to 1929, from December to May, the cases amongst tanners were 45 out of a total of 69. Similarly, in those cases occurring in docks, from November to April, 21 out of 27 occurred during that period." The same tendency to a seasonal increase of anthrax is revealed less conclusively in figures supplied by the courtesy of the manager of the United Tanners' Federation. In the past ten years 51 cases of anthrax have been reported to the Federation, and 34 of these occurred between December and May. These figures include some of the cases already mentioned above, while others have not come under the survey of this organisation. Further investigation as to a seasonal incidence in this country, and its cause, should prove interesting.

A more detailed account of the 11 medically treated cases is given below.

Case Reports.

All cases showed anthrax bacilli in smear and culture during the course of treatment. All serum was given intravenously except where (M) denotes intramuscular dosage or (T) intrathecal.

CASE 1.—Two days' infection. No initial lesion. Malignant anthrax œdema. Surgically inoperable and regarded as hopeless. Both sides of face and right side of neck swollen. From right eyebrow to right malar bone swelling was hard and purple. Treatment: first day, 60 c.cm. serum (M); second day, 80 c.cm. serum (M), 160 c.cm. serum, and 0·6 g. stabilarsan; third day, 160 c.cm. serum and 0·6 g. stabilarsan; fourth day, 80 c.cm. serum and 0·45 g. stabilarsan; fifth day, 80 c.cm. serum.

CASE 2.—Five days' infection. Well-marked eschar. Resistance apparently good. Treatment: first day 60 c.cm. serum and 0·6 g. stabilarsan. Second and fourth days 0·6 g. stabilarsan.

CASE 3.—Two days' infection. Well-marked signs. On fifth day, no œdema and no enlarged lymph glands; eschar had enlarged and fresh vesicles had appeared in areola. Treatment: Daily injection of 0·6 g. stabilarsan for five successive days.

CASE 4.—Malignant anthrax œdema four and a half hours after a blow from a hide. Treated within six hours of infection. With treatment resistance apparently improved, since eschar and areola appeared on third day. Less swelling and much more vesiculation (becoming pustular) on fourth day. Further pustulation on fifth day, but swelling and induration were less. Blood in pustules also. Œdema probably obscured any enlarged lymph glands. Discharged at his own request on eighth day. One month later an urticarial œdema observed; patient readmitted after five weeks, and died five days later from exfoliative dermatitis. Chronic nephritis found at autopsy, otherwise internal organs appeared normal. Arsenic found in liver, spleen, kidneys, and skin; none in hair or nails. Treatment: first day 0·6 g. stabilarsan; second day, 0·45 g. stabilarsan; third day, 0·45 g. stabilarsan, and 200 c.cm. serum; 0·45 g. stabilarsan; fourth day, 0·3 g. stabilarsan; 100 c.cm. serum and 50 c.cm. serum (M); fifth day, 0·3 g. stabilarsan and 100 c.cm. serum; sixth day 0·3 g. stabilarsan and 100 c.cm. serum.

CASE 5.—Five days' infection. General condition bad; pulse-rate 110. Considerable swelling of neck; albuminuria present. Treatment: first day, 0·45 g. neosalvarsan and 200 c.cm. serum. Second and third days, 200 c.cm. daily.

CASE 6.—Three days' infection. Commenced clinically as a typical staphylococcal pustule. Next day, anthrax œdema. Patient apparently comfortable on third day of treatment, but pulse uncountable and leucocyte count 10,400 per c.mm. On fourth day, restlessness, acute mental anxiety, severe præcordial pain, vomiting, dyspnœa, pulseless, clammy, then death in coma. No anthrax bacilli in smear or culture from lesion on day of death. Pure colonies of staphylococci found. Treatment: first day, 100 c.cm.

serum, 100 c.cm. serum (M) and 0·45 g. neosalvarsan; 200 c.cm. serum. Second day, 200 c.cm. serum.

CASE 7.—Four days' infection. Clinically a slight furuncle. Atypical anthrax bacilli in smear. Given 40 c.cm. serum as a precaution till culture result known. On second day apparently comfortable. No bacilli in smear or culture on third day, but staphylococci in large numbers. No result from guinea-pig inoculation. Sudden coma and death. Post-mortem examination four days later: brain congested; dura mater adherent; no hæmorrhages. Heart and liver paler than usual, otherwise normal, no hæmorrhages. Kidneys paler than normal, no clear demarcation between medulla and cortex; a few dusky spots with blurred outlines (? hæmorrhages) on cut surface. Spleen enlarged, black, very friable and soft. Anthrax bacilli found in brain and meninges, not in other organs. Treatment: first day, 40 c.cm., second day, 200 c.cm. (M); third day, 200 c.cm.

CASE 8.—Four days' infection. Retained in hospital on account of rise in temperature and slight jaundice, with slight joint pains. Treatment: first day, 200 c.cm. serum and 0·45 g. neosalvarsan; second day, 200 c.cm. serum.

CASE 9.—Three days' infection. Lymph gland became enlarged four days after admission. Treatment: first day, 200 c.cm. serum; second day, 200 c.cm. serum.

CASE 10.—Four days' infection. Bacilli 250 to a field on admission. At noon on third day two uncapsulated, small, badly staining bacilli only were found in the whole smear. Headache and nausea, with vomiting once or twice in the first three days; headache easily controlled by aspirin. Temperature rising on third and fourth days. Lumbar puncture showed blood-stained cerebro-spinal fluid. Patient collapsed after intrathecal serum. Apparently moribund. Rigid neck and Kernig's sign from the time they were first looked for (fourth day) until the ninth day. On fourth night Cheyne-Stokes respiration appeared. Swelling and headache much less on fifth day. Severe rigor after serum on fifth day. No headache, and only slight swelling and Kernig's sign on seventh day. Rise of temperature and itching of skin on ninth day. Treatment: first day, 0·45 g. neosalvarsan; second day, 0·45 g. neosalvarsan; third day, 200 c.cm. serum; fourth day, 180 c.cm. serum and 20 c.cm. serum (T); fifth day, 100 c.cm. serum and 20 c.cm. serum (T).

CASE 11.—Three days' infection. Symptoms of a "cold in the nose" after first intramuscular injection. Severe dyspnœa and cyanosis after first intravenous injection of 20 c.cm. serum. Further attacks of dyspnœa and cyanosis after all other injections when the dose exceeded 10 c.cm. of undiluted serum. Feeble heart sounds and epigastric pulsation present one month after.

Discussion.

Certain results shown in the above résumé seem to be worth attention. In all cases in the series treated medically (although the notes are incomplete on this point), anthrax bacilli had disappeared or greatly diminished in the local lesion, but there was not necessarily a corresponding fall in the temperature. In Case 3, treated by arsenic only, bacilli disappeared and the temperature fell on the same day. In Cases 8 and 9 treatment was stopped when bacilli were no longer found in the "pustule," and both cases recovered, though the temperature did not return to normal until from one to three days afterwards. Cases 6 and 7, though the lesion was apparently free from anthrax, both died, and anthrax meningitis was discovered at autopsy in one. In Case 10 the initial lesion was apparently free of anthrax on the third day, but clinical evidence of anthrax meningitis was discovered on the following day.

The bacteriology of the "pustule," then, is unreliable as a guide to the progress of the disease. In Cases 6, 7, and 10 staphylococci were found in considerable numbers in the original lesion, and this may be the solution of the problem presented by an anthrax-free skin lesion in a patient profoundly infected by the bacillus.

Frank concluded, from a study of mixed anthrax infections in guinea-pigs and mice, that staphylococci inhibit the growth of *Bacillus anthracis*. Two of these cases revealed a mixed infection in what seemed from naked-eye appearances to be a staphylococcal lesion. In general, however, the original lesion is not pustular. "Striking," says Santee, "are the absence of pus, the absence of much pain or tenderness, the non-pitting or semi-solidity of this huge œdema, and in most of these cases the absence of enlargement of the draining nodes." Eurich and Hodgson express themselves equally emphatically on the misnamed "pustule"; and such indeed is the impression retained by me. The presence of pus, however, does not contra-indicate anthrax, as appears evident from Cases 6 and 7 especially and from the case reported by Cleland.

Enlarged lymph glands may on further investigation prove to be a comparatively late manifestation of the disease. They were not found in Cases 3, 4, and 9, and my impression (from memory only) is that they were also absent in Case 1.

"The development of a localised pustule indicates a degree of resistance to the bacteria, while a widespread œdema is evidence of failure of the tissue to prevent the advance of the infection." This statement by McGlannan appears to be supported by the clinical progress of Case 4; here, four and a half hours after receiving a blow from a raw hide, a malignant anthrax erysipelas occurred and advanced in spite of arsenical treatment. As the disease checked, so did the eschar and vesiculation appear and increase, while swelling diminished, until the maximum of vesiculation was reached on the fifth day. It will be seen that this case was first treated with stabilarsan, and that serum was not used until later.

The case for chemotherapy is enthusiastically summarised by Canwright, and Pijper's excellent results lead him naturally to claim that the use of organic arsenic is safe. I cannot go so far in my advocacy. Such small evidence as appears above gives support to the views of Eurich and Pijper that dull doses are necessary. I suggest that, when anthrax infection is cured, an immediate course of treatment by sodium thiosulphate should follow; but would not the use of serum in the first instance prove to be the shorter and safer treatment after all?

A single dose of neosalvarsan may not only have a beneficial direct effect, but its indirect action may also be of value. Walker's work on rabbits, though affording no proof of this, suggests it, but suggests further that repeated doses may interfere with natural immunising processes. If an arsenical is to be used, the clinical and biochemical examination of the patient must be made with care, and the previous history will also, of course, be important. Here a difficulty arises. The patient's own inability to give correct information may at times be a serious bar to the safe use of this remedy. Moreover, the question of compensation may introduce a complication. Doubtless the patient should give a correct personal history, but doubtless also he and his relations are under a temptation not to do so. In spite of these considerations, neosalvarsan should be borne in mind as an effective remedy in such hospitals as are called upon to treat anthrax without having a supply of anti-anthrax serum at their immediate disposal. Time is an all-important factor, and 12 or 24 hours saved in commencing treatment may make all the difference to the result.

ANTHRAX MENINGITIS.

Meningitis is usually regarded as a rare complication of cutaneous anthrax. Kauffman makes no reference to it, and Zingher in a single paragraph dismisses it as resembling ordinary meningitis when

it occurs. It will be noticed that of the 22 cases reviewed above four died in coma. Two of these were examined post mortem. One (Case 7, Table II.) was proved to have anthrax meningitis. The other (Table I., Case 11) not only contained anthrax bacilli in meninges, brain, heart, and liver, but also showed hæmorrhage into both parietal lobes and the cerebellum. Eurich has not infrequently found extravasations of blood between the brain and spinal cord and into the lateral ventricles. In Santee's cases "several autopsy reports showed in addition to the septicæmia . . . a pial œdema or congestion with the formation of small hæmorrhagic foci." Ellis reports a case of apparent recovery from anthrax in which headache was followed by death within six hours. Cerebral hæmorrhage and meningitis were found. Kraus and Spikes and Cleland found meningitis or congestion of the brain in both their cases. During life, however, meningitis does not appear to be a conspicuous part of the picture; in the four cases referred to above it was neither suspected nor examined for until coma was evident. In the one case of meningitis that recovered the bedside appearance did not suggest meningitis, although rigidity of the neck and Kernig's sign were revealed by examination after the cerebro-spinal fluid had shown evidence of meningitis. As regards the central nervous system, these cases have not therefore conformed to Zingher's description but rather to that by Symmers, who is alluding to septicæmia: "While the anthrax pustule itself offers a forbidding aspect, the appearance of the patient, on the contrary, is apt to give one the impression of extraordinary tranquillity."

In animals the onset of death may be masked almost to the very end. One wonders if the painlessness of the disease which is so evident in the local lesion may not have its counterpart in an analgesic condition of the central nervous system when the disease is general. It might be well to look for nervous symptoms in all cases, and not to spare the use of lumbar puncture for both diagnosis and treatment. It is possible that by such means the heavy dosage that is occasionally necessary might be much diminished.

Conclusions.

A comparison of the combined surgical and serum treatment of cutaneous anthrax, and of medical treatment alone, shows that recovery is quicker by the latter method. This comparison is made from cases which all occurred in the same district, under much the same conditions of infection as regards site and severity.

Amongst tanners, cutaneous anthrax tends to occur more frequently in winter and spring (and mainly amongst those employed on "dry" hides).

Organic arsenic, if used, should be given in large doses. Smaller doses do not appear to have sufficient therapeutic effect to justify their use, and their cumulative effect is probably as dangerous as that of one or two large doses.

Staphylococci appear to assist in inhibiting the growth in cutaneous lesions. The presence of pus is not necessarily a contra-indication of the existence of anthrax in a lesion.

Anthrax meningitis is apparently insidious in onset, and may be more common than is usually suspected.

I am indebted to Dr. H. A. Mitchell for the bacteriological reports cited in these cases, and to Dr. Robert Coope for his criticism and encouragement in the preparation of this paper.

(*Bibliography at foot of next column.*)

URINARY CREATININE AS A TEST OF RENAL EFFICIENCY.

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It is now generally recognised that the retention of creatinine in the blood is a constant accompaniment of advanced cases of nephritis and also that the degree of retention may be taken as an index of the degree of renal damage or impairment of kidney function. The normal amount of creatinine in the blood varies from 1 to 2 mg. per cent., and Myers and Killian [1] have shown that an increase of blood creatinine above 5 mg. per cent. points to a serious impairment of the excreting power of the kidneys and indicates a grave prognosis. In such cases death almost invariably follows in a short time. These observers conclude that in cases of advanced nephritis the blood creatinine furnishes a more reliable prognosis than any other test, and that in cases showing a considerable retention of urea, without retention of creatinine, ultimate improvement may take place. Patch and Rabinowitch [2] also, in a large series of observations, found that, in spite of high blood-urea values, symptoms of uræmia were usually absent when the creatinine values were normal or nearly normal.

Our knowledge of the physiology of creatinine is neither extensive nor accurate, but certain important facts are generally accepted. 1. It is probably a waste product and, on a meat-free diet, it is derived entirely from endogenous metabolism. 2. Its formation and excretion are normally very constant. 3. The daily output in man varies from 0·8 to 2 g. and the amount for a given individual varies but little, being almost independent of the protein intake. 4. The amount excreted appears to bear a definite relationship to the body-weight, so that large men excrete more than small men, and men excrete more than women. In infants and young children the amount is comparatively small, the adult level not being reached until after the fourteenth or fifteenth year.

(*Continued from previous column.*)

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TABLE SHOWING RESULTS IN TWENTY-SEVEN CASES.

Case.	Sex and age.	Disease.	Clinical condition (c.c.) and result.	Creatinine excretion in 24 hours (g.).	Percentage of minimum normal.
1	M. 68	G.U.	On diet of 2–3 pints milk daily	0·983	123
2	M. 33	„	„ „ „	1·417	177
3	M. 22	A.N.	Convalescent; c.c. satisfactory	1·735	217
4	M. 32	„	„ „ „	1·50	187·5
5	M. 34	„	3 weeks after onset	0·676	84·5
			6 „ „ „	1·30	162·5
			Clinically well.		
6	M. 24	„	3 weeks after onset	1·283	160·4
			5 „ „ „	1·08	135
			6 „ „ „	1·029	128·6
			Progress unsatisfactory. Persistent œdema and albuminuria. Six weeks after onset blood pressure 185/105. Fundi normal.		
7	M. 51	„	Convalescent; c.c. satisfactory	1·0	125
8	F. 20	„	1 week after onset	0·972	121·5
			Slight; early recovery.		
9	F. 42	C.N.	C.c. satisfactory	0·9	112·5
10	M. 55	A.N.	Convalescent; c.c. satisfactory	0·821	102·6
11	M. 16	„	3 weeks after onset	0·744	93
			8 „ „ „	0·8	100
			Slow improvement. Persistent slight albuminuria and hæmaturia.		
12	M. 65	C.N.	Persistent albuminuria with slight hæmaturia. Arteriosclerotic changes in fundi. B.p. 160/90	0·696	87
13	M. 64	„	Persistent albuminuria and œdema. Sys. b.p. 200. C.c. unsatisfactory. Dead five months after examination ..	0·638	79·7
14	M. 54	„	Condition unsatisfactory. Blood-urea 190 mg. B.p. 155/95 ..	0·531	66·4
			Three months later general condition much worse. Further progress unknown.		
15	M. 28	A.N.	2 weeks after onset	0·405	50·6
			3 „ „ „	0·52	65
			4 „ „ „	0·688	86
			5 „ „ „	0·91	114
			7 „ „ „	0·459	57·5
			11 „ „ „	0·468	58·5
			12 „ „ „	0·36	45
			Slow improvement. Persistent albuminuria and hæmaturia.		
			Reference remarks at end.* ..	1·456	182
16	F. 35	S.N.	4 weeks after onset	0·348	43·5
			4½ „ „ „	0·323	40·4
			5 „ „ „	0·37	46·2
			5½ „ „ „	0·464	58
			6 „ „ „	0·353	44
			7 „ „ „	0·297	37
			Persistent œdema and albuminuria.		
			Reference remarks at end.† ..	0·938	117·25
17	M. 22	A.S.N.	Admitted after indefinite history of three weeks' duration (see below.‡		
			3 days after admission ..	0·704	88
			7 „ „ „ ..	0·567	71
			10 „ „ „ ..	0·3375	42
			13 „ „ „ ..	0·441	52·5
			16 „ „ „ ..	0·405	50·5
			22 „ „ „ ..	0·405	50·5
			25 „ „ „ ..	0·4725	59·5
			Died of uræmia 28 days after admission. Autopsy showed large pale kidneys with changes of subacute nephritis.		

TABLE OF RESULTS—(*continued*).

Case.	Sex and age.	Disease.	Clinical condition (c.c.) and result.	Creatinine excretion in 24 hours (g.).	Percentage of minimum normal.
18	F. 32	A.N.	Admitted two months after onset (see below).§		
			3 days after admission ..	1·03	129
			5 „ „ „ ..	1·08	135
			5 weeks „ „ ..	1·038	130
			Slow steady improvement throughout.		
19	M. 39	C.N.	With acute exacerbation. Signs of old hæmorrhages in fundi. B.p. normal. (Not traced) ..	0·3	37·5
20	M. 62	„	B.p. 190/130. Arteriosclerotic changes in fundi. Death 3 weeks after examination ..	0·373	46·6
21	F. 12	S.C.N.	Œdema + +, albuminuria + +, blood-urea 196 mg. Retinitis, average b.p. 180/120.. ..	0·42	52·5
			Six weeks later	0·17	21·25
			Death one month after second examination.		
22	M. 37	C.I.N.	Acute exacerbation; uræmic neuro-retinitis; cardiac hypertrophy; b.p. 190/100. Examined 12 hours before death	0·27	33·7
23	F. 14	S.C.N.	Persistent œdema and albuminuria; average b.p. 200/122	0·289	36
			Five days later	0·118	14·75
			Death two days after second examination.		
24	M. 53	C.I.N.	B.p. 240/112; advanced changes in fundi. Discharged in very bad condition. Further progress unknown	0·243	30·4
25	F. 42	„	Cardiac hypertrophy; b.p. 190/125; blood-urea 270 m.g.; retinitis	0·154	19·25
			Death a few days later.		
26	F. 14	„	B.p. 280/210; hæmorrhages in fundi	0·17	21·25
			Death a few days later.		
27	F. 42	„	B.p. 228/152; hæmorrhages in fundi	0·0372	4·65
			Death two days later.		

G.U. = Gastric ulcer. A.N. = Acute nephritis. C. = Chronic. S. = Subacute. I. = Interstitial. B.p. = Blood pressure.

*CASE 15.—Dismissed with evidence of condition becoming chronic, but fundi and blood pressure normal. One year after onset general condition fairly good. No definite cardiovascular changes. Blood pressure 142/68. Urine showed moderate albuminuria and trace of blood. Creatinine normal.

†CASE 16.—Dismissed with œdema and albuminuria. Blood pressure normal. Slight arteriosclerotic changes in fundi. Œdema disappeared two months after discharge. Two years later showed evidence of chronic nephritis. Anæmic, no œdema, slight cardiac enlargement. No palpable thickening of arteries. Albuminuria +, with granular and hyaline casts. Blood pressure 126/90. Creatinine normal.

‡CASE 17.—On admission, widespread œdema, albuminuria + +, hæmaturia, abundant casts, chlorides absent. Blood pressure 158/98. Retinal vessels full. Breathless and dazed. Impending uræmia.

§CASE 18.—On admission, breathless, dimness of vision, bronchitis, albuminuria, slight hæmaturia. Blood pressure 180/110. Threatened uræmia.

Technique of Investigation.

During the past two years I have investigated the creatinine excretion in numerous cases of nephritis. The method I have adopted is as follows.

The urine is collected for 24 hours and measured in cubic centimetres. The estimation, which should be made as soon as possible after the termination of the collecting period, is carried out by Folin's method, using a Duboscq-Hellige colorimeter with a solution of pure potassium bichromate (24·55 g. per litre) as the standard. It is important to note that the

urine must be free from acetone and aceto-acetic acid. The result may be expressed in two ways :—

(1) As the *total amount of creatinine excreted in 24 hours*. Normally in an adult this should lie somewhere between 0·8 and 2 g. and in cases showing a very marked reduction in the output this method of expressing the result is entirely satisfactory. In Cases 26 and 27 (see Table), for example, in which the daily output was 0·17 g. and 0·0372 g. respectively, the figures are so far short of the normal that no further comment is necessary. Both patients were actually dying of chronic nephritis when the estimations were made.

(2) As the *percentage of the normal minimum output*. If 0·8 g. be taken as the normal minimum output, then a patient who excretes that amount in 24 hours will excrete 100 per cent. of the minimum normal. In the same way a total excretion of 1·6 g. will represent 200 per cent. of the minimum normal, while a total excretion of 2 g. (the maximum normal) will represent 250 per cent. of the minimum normal. In the two cases already referred to (Cases 26 and 27), the percentages would be 21·25 and 4·65 respectively. The figures here suggested are no doubt open to criticism. No account is taken of the weight of the patient, but the weight of a nephritic patient may be entirely fallacious when œdema is present, and as the calculations are based on the minimum normal output this objection is not a very real one.

In the Table the results are shown in 27 cases, including two cases of gastric ulcer. The latter are included for the purpose of comparison with nephritic cases. They showed no evidence of renal disease, and, at the time of examination, were on a diet closely approximating in food value to the diet of acute nephritics. Both showed a normal creatinine excretion. Cases 3, 4, 5, 7, 8, 9, and 10 progressed satisfactorily and were dismissed well. Case 6 drifted on to a subacute condition, and after three months' treatment was dismissed with albuminuria and some œdema. His creatinine output was good. He has not been seen again, but two years after he left hospital he was reported to be in fairly good health and working regularly. In Cases 11, 12, 14, 15, 16, and 19 progress was unsatisfactory and showed clinical evidence of the development of a chronic condition. Case 18 is still in hospital. Cases 13, 17, 20, 21, 22, 23, 24, 25, 26, and 27 were regarded as bad. With the exception of No. 24, who has not been traced, all were dead soon after examination.

An analysis of various types of nephritis shows that in acute nephritis the creatinine output may be normal or diminished. In those cases showing a definite diminution the output rises as the acute stage passes off if the case is pursuing a favourable course. If, on the other hand, the clinical features point to the development of a chronic condition, the output shows either a steady decline or a failure to rise to the high level usually found in favourable cases. In subacute nephritis—i.e., large white kidney with persistent œdema and albuminuria—a low creatinine output, though not necessarily of grave prognostic significance at the time of examination, probably indicates serious damage to the kidneys and the early development of cirrhotic changes. In established chronic nephritis, especially in those cases with cardiovascular and eye changes, the creatinine output may be taken as a reliable prognostic guide. In severe cases with impending uræmia the output is excessively low.

The Table includes 9 cases which terminated fatally. In all of these the creatinine output was abnormally low and the prognosis, on purely clinical grounds, was never in doubt. The test described may therefore be regarded as confirmatory, or perhaps even as a measure, of the degree of renal damage, even though it might appear to be superfluous in advanced chronic cases. In early chronic cases, on the other hand, where the clinical features are not sufficiently well developed to allow of an accurate prognosis, it is suggested that the test would be of some help in the endeavour to assess the degree of structural or functional renal damage. The test is one which can be easily and frequently performed, and the results, expressed as percentages of the normal minimum output for adults (and to which the term Creatinine Index might be aptly applied), seem to be of definite prognostic value. It should be borne in mind, however, that nephritis is a disease which demands a wide clinical outlook, that the prognosis of every case must depend primarily on a clear conception of the complete clinical picture, and that, until we have a more extended knowledge of the nature of nephritis, all tests of renal efficiency should be regarded merely as useful adjuncts in clinical investigation.

I have to express my indebtedness to Dr. A. W. Harrington, visiting physician, Glasgow Royal Infirmary (to whom I acted as assistant for some years), for permission to publish the results of this investigation. The cases examined have been under his care in his hospital wards. I have also to thank Dr. D. P. Cuthbertson, biochemist to the Infirmary, for granting facilities for carrying out the urinary examinations in his laboratory and for much helpful advice.

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CLINICAL AND LABORATORY NOTES

THE ACTION OF LIVER PREPARATIONS ON DIABETES.

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Blotner and Murphy [1] showed that certain aqueous extracts of liver and their concentrates cause a lowering of the blood-sugar when taken by mouth. They claimed that the extract from one pound of liver had an action on diabetics equivalent to some ten units of insulin. This naturally seemed of practical importance as well as theoretical interest. The results herein recorded, however, fail to confirm their conclusions.

[1] Blotner, H., and Murphy, W. P.: Jour. Amer. Med. Assoc., 1929, xcii., 1332; 1930, xciv., 1812.

As the liver extract which is claimed to be effective in diabetes is different from that used in pernicious anæmia, a special extract was prepared, as described by Blotner and Murphy. This was kindly provided by the British Drug Houses, and Dr. F. H. Carr has sent the following details of the method employed : "Liver taken quickly from recently slaughtered oxen was finely minced with a little water and the hydrogen-ion concentration adjusted to 4·8 with N/1 sulphuric acid. The mixture was kept for 16 hours at 35–40° C., and the clear filtrate removed. This was heated to 80° C. for 30 minutes, and the coagulated material was filtered off, washed with water, drained and dried in vacuo at room temperature ; 11½ kilos of ox liver yielded 6·8 g. of the product." This extract was tested in doses corresponding to one and two pounds of fresh liver (0·3 g. and 0·6 g. extract). As Blotner and Murphy show that the

action of their extract can be observed in three to eight hours, there was no need for prolonged investigation over several weeks.

The experiments were all carried out on a young diabetic man, aged 23, a "pedigree" insulin case. He has had the same diet and insulin, 24 units in the morning, 20 units in the evening, for four years, and has been the test subject for many experiments of this kind. It is usually possible to detect clearly the effect of a change of two units in his dose and always of four units. His blood-sugar fasting is about 0·23 per cent., is reduced to about 0·07 per cent. or 0·09 per cent. five hours after insulin, and rises again to about 0·23 per cent. nine or ten hours after insulin. The corresponding glycosuria is also very regular in its appearance and disappearance at certain hours. The effect of the liver extract was observed on him in two phases: (1) by giving the extract by mouth with the usual injection half an hour before breakfast to see if it produced any unusual hypoglycæmia; and (2) by giving the extract at midday to see if it prevented the usual recurrence of hyperglycæmia after the insulin action wears off in the late afternoon. At first the usual dose recommended by Blotner and Murphy was given, and later double the dose, corresponding to 2 lb. of liver. In not a single experiment was any difference in glycæmia or glycosuria observed from the comparable control days without the extract.

Therefore, on a typical uncomplicated case of diabetes of moderate severity I have been unable to detect any action from the use of a liver extract described as effective in reducing the blood-sugar. No experiments have been carried out on mild cases not requiring insulin, as I believe such experiments are less definite and more liable to error in judging the effect of a remedy on the essential diabetic process.

I wish to thank the British Drug Houses, Ltd., for preparing the special liver extract.

A METHOD OF REDUCING SUPRA-CONDYLAR FRACTURES OF THE HUMERUS.

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Sir Robert Jones's method of reducing supra-condylar fractures of the humerus is as follows:—

"The surgeon should grasp the child's wrist with the right hand and place the left hand around the upper arm, so that the thumb puts pressure on the lower end of the upper fragment, just above the elbow. The forearm should be extended and pulled in order to disengage the lower fragment. When this has been done the forearm should be supinated, and while the pull is maintained the arm should be flexed while the upper fragment of the humerus is pushed back. The arm should be flexed to 30 degrees, or as near 30 degrees as the swelling will allow." [1]

This method gives excellent results in the majority of cases, especially when there is little lateral displacement. In cases where there is much backward and lateral displacement it may fail and an alternative method may be required. The technique to be described may result in successful reduction in cases where open correction seems the only possible solution; it is certainly worth a trial before cutting down.

[1] Practitioner, July, 1930.

The child is anæsthetised and lies on his back. The surgeon stands on the side of the injured limb, which is raised with the humerus vertical, the hand and forearm being allowed to fall flexed towards the chest. The hand is steadied by an assistant or the anæsthetist. The surgeon interlocks his fingers round the flexor aspect of the humerus and so grasps the humerus firmly. The thumbs are placed vertically side by side on the dorsal aspect. Keeping the humeral shaft absolutely steady in the fingers, the surgeon now exerts pressure with his thumbs upwards and forwards on the lower fragment and guides it to its proper position. If the lower fragment is impacted, it is disimpacted by increasing the deformity—i.e., extension at the elbow-joint. When there is lateral deviation more pressure is exerted by the appropriate thumb to correct it. The fragment will be felt to move upwards and then slip forwards and engage. The assistant does nothing but maintain the position as it improves—with the forearm supinated—under the surgeon's manipulation. When the surgeon is satisfied, by the relationship of his thumbs to his interlocked fingers, that the reduction is complete, he will find that he has obtained flexion to almost 30 degrees. The flexion is maintained by slinging the wrist under the chin, no splint or other retentive apparatus being necessary.

This method approaches the problem of reduction from above, and has several advantages. The lower fragment of the humerus is controlled by the thumbs and is gradually pressed into position, and its jagged upper extremity does not tear into the fibres of the biceps. The amount of manipulation required is reduced to a minimum and the unconsidered force of a powerful lever is dispensed with. (The chance of damaging nerves during reduction is infinitesimal.) The local disturbance is very small, even in cases where considerable œdema and swelling already exist. The risk of ischæmia—fresh hæmorrhages not being commenced—is, therefore, reduced. The lateral displacement is much more easily controlled and corrected. Good hands and strong thumbs may be essential to success in these manipulations, but any surgeon who does much orthopædic work should soon develop these assets.

The method described has been successful in cases where other methods of reduction have failed and open correction has been considered. The presence of much œdema was not found to be an obstacle to reduction.

A CASE OF COR BIVENTRICULARE TRILOCULARE WITH TRANSPOSITION OF VISCERA.

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Maud Abbot [1] reports only four cases of cor biventriculare triloculare in 850 cases of congenital cardiac disease which she has analysed. Three of the cases died in infancy. In no case is mention made of a complete transposition of abdominal viscera, as was found in the following case:—

The patient, a woman of 27, was admitted to the wards of the Royal Infirmary, Edinburgh, in September, 1928, while they were under my charge during the absence on holiday of Dr. A. Goodall. When first seen by me she was in the last stages of cardiac failure. I am indebted to Dr. H. V.

[1] Abbot, Maud: Modern Medicine, 3rd edition, London, 1927.

Thwaites, her family doctor, for a very complete set of notes of her past history, of which a summary is appended.

HISTORY OF THE CASE.

The patient was born in 1901, and was one of a family of three; the first child lived for only 12 hours but the second was a healthy male. No difficulty was encountered during the birth of the patient, which was normal. She was fed on the breast. She began to walk and talk at the usual age, was clever at school, was always active, and never suffered from dyspnœa until after an attack of measles at the age of 9. This was the only infectious disease from which she suffered. After this attack she was apt to be breathless on slight exertion, but she never had any fainting turns. Her colour was high. From the age of 10 to 15 years, while still at school, she helped in the work of the house, and at the age of 15 she entered domestic service. In all the situations which she took she was hard worked, and though she was often breathless and occasionally had to spend a day in bed, she was never sufficiently ill to have to give up work and return home. She carried on her domestic service up to the age of 23, when she began to have fainting turns. These turns came on by day or by night, and were not always related to exercise; they frequently occurred after meals. They were characterised by sudden onset, nausea, palpitation, breathlessness, a feeling of choking and, in some cases, by unconsciousness. Many of them passed off suddenly—within half an hour.

On examination in 1924, at the age of 23, a systolic murmur was heard all over the præcordia, which was not conducted upwards from the aortic arch nor outwards from the mitral area. The point of maximum intensity was over the fourth costal cartilage at the edge of the sternum. Percussion of the left border of the heart revealed no dilatation, nor was the liver palpable. During the next three years she had numerous similar paroxysmal attacks. Some came on when at rest, and others after exertion. She was sent to the Royal Infirmary for examination, and the physician who saw her reported that a loud systolic murmur was present, best heard in the tricuspid and pulmonary areas, and that the red blood count showed the presence of a polycythæmia of 8,000,000. From the history that since early childhood the patient had had a high colour, and had been breathless on exertion, a diagnosis of congenital cardiac disease was made. No clubbing of the fingers was present—a point of some interest with such a long history.

Between 1925 and 1927 the patient returned to domestic service for periods of several months, but was always short of breath after exercise and on many occasions had to give up work for attacks of acute heart failure. The attacks started suddenly with intense dyspnœa, threatened syncope, and vomiting. The pulse-rate rose to 150–200 per minute, and on many occasions was completely irregular, many of the beats failing to come through to the radial pulse. The nature of the paroxysmal attacks of rapid pulse-rate was never definitely settled, as no electrocardiographic tracing was obtained, but it was presumed that they were paroxysmal attacks of auricular fibrillation because of the gross irregularity of the pulse. While many of these attacks stopped within a short period as suddenly as they started, a number of them went on for some days, and the patient remained in bed and was treated with digitalis.

In November, 1927, she went back to work again, but returned home eight months later in a very exhausted condition, with a history of having had paroxysmal attacks of heart failure, of the type already described, almost every day for a week. She was given digitalis and improved slightly, but after two months' treatment further signs of serious heart failure appeared. On August 10th, 1928, a hard troublesome cough began, and slight œdema of the ankles was first noticed. The œdema spread to the feet, the cough got worse, and by August 29th the œdema was generalised and she had pain in the left side at the back, with impairment of the percussion note over the lung and distant breath sounds. She was admitted to the wards of the Royal Infirmary, and when first seen by me was suffering from marked orthopnœa, and gross œdema was present in the legs and back. Examination of the lungs revealed signs of chronic venous congestion, the liver was just palpable below the costal margin, and the patient had a distinct icteric tint. The face showed none of the blue coloration believed to be so characteristic of congenital heart disease, nor was there any clubbing of the fingers. The urinary output was low, albumin was present, and in spite of digitalis treatment the cardiac condition failed to respond and the patient died on Sept. 29th, 1928, aged 27, in a water-logged condition.

POST-MORTEM NOTES.

The anatomical and pathological observations given below were made by Dr. J. Whittaker, who, at the time of the patient's death, was clinical tutor in the wards of the Royal Infirmary and assistant in the Department of Anatomy at the University of Edinburgh.

The body was that of a fairly well-developed, well-nourished female. There was general anasarca, and the skin was slightly jaundiced. Post-mortem lividity and rigidity were present. The heart was greatly enlarged.

On opening up the auricles posteriorly, the septum between the two was found to be deficient. The only indication of a division into the separate cavities was a strong band of muscle which merged above into the roof of the auricles and below into the floor, being connected in the middle of its extent by a thin muscle strip to the anterior wall of the auricles. Hence two openings were formed anterior to this partial septum; the one above, the other below the thin horizontal band. The upper opening served as a communication between the left pulmonary vein and that portion of the large auricular cavity which represented the right auricle, the two left pulmonary veins having joined together to form a single trunk. The lower opening formed a further communication between the right and left auricles. The right pulmonary veins, two in number, opened separately into the upper part of the right auricle, the anterior and upper vein being large, the posterior and lower very small. The innominate veins also pursued an abnormal course. The left innominate vein, which was of normal diameter, ran down the left side of the œsophagus and, joining with the left superior intercostal vein, opened into the left auricle. The right innominate vein was joined by the azygos vein to form a short superior vena cava. The inferior vena cava, a large trunk, opened into the lower part of the auricular cavity to the left side of the partial septum.

Hence the openings into the cavity which served as a right auricle were the four pulmonary veins and the short superior vena cava; also there was the coronary sinus. Moreover, into that cavity, which was homologous with the left auricle, opened the left innominate vein and the inferior vena cava. There was, therefore, no superior vena cava. The right auriculo-ventricular valve was guarded by three cusps, one posterior and two anterior.

The musculature of the right ventricle was very thick and corresponded in appearance to that of a normal left ventricle. There were three papillary muscles; two anterior, one arising from the anterior wall and one from the inter-ventricular septum; one posterior, from the posterior wall. The chordæ tendineæ from the posterior papillary were inserted into the sides of the posterior cusp and right anterior cusp.

The aorta arose from that ventricle which was situated in the right side of the heart. It arched over the right branch of the pulmonary artery and over the right bronchus, and passed down the right side of the œsophagus. The pulmonary artery came from the left ventricle. The ventricular septum was complete, and the aorta and pulmonary artery were quite separate. The origin and distribution of all branches of the aorta, both thoracic and abdominal, was a mirror image of the normal. This was to be expected, since a complete transposition of the viscera was present. The inferior vena cava and its tributaries presented the same phenomenon, and the lungs were transposed. Thus the left lung had three lobes and the right lung two, and the arrangement of the structures at the hilum from above downwards on each side was correspondingly reversed.

From the pathological point of view there is little to state. There was a slight excess of straw-coloured fluid in the pericardial sac. There were milk spots at the back of both ventricles and one on the tricuspid valve—i.e., the valve guarding the anterior surface of the left ventricle. The right auriculo-ventricular opening was considerably thickened, although there were no vegetations present.

DISCUSSION.

The essential features of this case may be summarised as follows: (1) an absence of the inter-auricular septum; (2) transposition of the great venous and arterial trunks, and a mirror-picture dextra-cardia; and (3) transposition of the thoracic and abdominal viscera.

The absence of cyanosis, in spite of such a marked congenital defect, might appear remarkable, but Maud Abbot states that the absence of the inter-auricular septum does not itself produce cyanosis, unless associated with a maldevelopment of the pulmonary veins. The association is lacking in this case. The fact that a person with such remarkable anatomical anomalies could lead an active life for 27 years warrants the publication of this individual case.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF ODONTOLOGY.

AT a meeting of this Section held on Nov. 24th the chair was taken by Mr. C. SCHILLING, the President.

Dr. J. F. VENABLES read a paper on

The Teeth and the Stomach

by Dr. A. F. HURST. The normal man, he said, need swallow nothing that was not suitable in its mechanical and thermal properties for the stomach to deal with. Few people, however, used their masticatory mechanism adequately and the gastric juice had to deal with chemical and thermal irritants, while the churning action tried to make up for lack of chewing, and the hydrochloric acid destroyed infected material from an unhealthy mouth. Thus the delicate and vitally important intestinal mucosa had not to deal with irritants provided there was a healthy stomach. When the stomach was ill-treated by bad use of the first line of defence it was unlikely to suffer unless its owner were one of the 10 per cent. with deficient hydrochloric acid secretion; then chronic gastritis with achlorhydria would result. Thereafter the stomach failed to protect the duodenum, and bacteria flooded it, both from the mouth and from the colon. This infection was the chief, though probably not the only reason of the association of achlorhydria with so many diseases. Thus pyorrhœa and inadequate chewing played an indirect part in a very large number of secondary diseases. The glossitis of Addison's anæmia and subacute combined degeneration of the cord was very rare in the absence of achlorhydria; many patients attributed this sore tongue to their teeth, and dentists might make an early diagnosis.

The 10 per cent. of people with natural hyperchlorhydria were well protected. According to Rosenow a streptococcus could be isolated from the teeth of most people with gastric and duodenal ulcer, but his work had not received much support. Nevertheless dental disease played an undoubted part in ulceration and its treatment was an essential part of the treatment of ulcer. Much could be done by dental hygiene to prevent the swallowing of infected material, and any bad teeth should be removed as soon as occult blood had disappeared from the stools. During convalescence pyorrhœa should be thoroughly treated; the patient should see his dentist every three months. There was much evidence that cancer of the stomach was never a primary disease, so that the treatment of chronic gastritis or ulcer might be a method of preventing malignant disease.

Abdominal operations should be postponed until dental disease had been treated, as they caused a reflex achlorhydria, with the result that swallowed organisms were not destroyed; this might be the cause of post-operative ulcers.

Thus dentists could do much to prevent many kinds of gastro-intestinal disease directly and other forms of disease indirectly.

Mr. G. J. TURNER asked what value was to be placed on the mastication of meat. He thought it was the food that least needed chewing, while stodgy carbohydrates needed most. Was it possible for bacteria to pass through a normal gastric juice? Did not swallowing foul matter from adenoids or pyorrhœa inhibit the secretion of juice? It had been said that recurrence of duodenal ulcer was entirely due to lack of dental treatment after operation. He was glad to hear pyorrhœa regarded so seriously; he thought a mouth should be thoroughly cleaned every month, for decomposition started again within 24 hours of cleansing.

Mr. S. A. RIDDETT asked how frequently the Addisonian anæmia syndrome might be expected to appear in ordinary practice.

Dr. F STOLKIND said that every healthy tooth was worth £200 in American health insurance; the companies saw the connexion between a healthy mouth, a good digestion, and long expectation of life. The Russian peasants knew nothing of cleaning the teeth, but their good mastication kept their teeth in excellent condition. People in civilised life had no time for mastication, and soft food had been substituted for it; the result was indigestion, especially constipation. Careful mastication by good teeth had great therapeutic value in gastro-intestinal disease, but artificial teeth could not replace real teeth. Edentulous patients suffered less from indigestion if they ate without their teeth.

Dr. HUGH STANNUS asked if any work had been done on what proportion of persons masticated properly. Animal tissue was digested best if not masticated, and the vomit of a mixed meal revealed amazing masses of carbohydrate but little animal tissue.

Dr. H. W. KENSHOLE remarked that the gastric acidity decreased between meals, and infected material could pass through more easily at that time. When the acid was secreted into the gastric juice there was a relative alkalinity of the blood. Could achlorhydria be associated with acidosis?

Mr. ALFRED BAYLISS asked whether any definite dental picture and reaction of the saliva were associated with achlorhydria. He had noted a definite rise in alkalinity of the saliva around the period of a meal.

The PRESIDENT recalled the case of a man who had no two teeth meeting in his jaws; he had kept healthy by living on meat, especially steak.

Mr. ARTHUR BULLEID asked if the conservative treatment of pyorrhœa could be supported by the administration of hydrochloric acid to avert extraction.

Mr. E. PUGH asked at what period bad teeth should be removed in ulcer cases, whether the socket should be curetted, and if a vaccine were recommended.

Dr. VENABLES agreed that the mastication of meat was far less important than that of other forms of food. He did not think that a person with a normal secretion was likely to pass bacteria through the stomach, even between meals. That bacteria did not reach the duodenum was proved by the hundreds of sterile duodenal specimens that had been obtained. The Hunterian glossitis was not common, but once seen was very easily recognised. He could not say what proportion of people efficiently masticated their food. People with achlorhydria had no abnormal hydrogen-ion concentration in the blood and there was no definite dental picture that could be associated with their condition, except that a mouth pouring with pus probably indicated achlorhydria. An early case of pyorrhœa might have hyperchlorhydria, and it would not be safe to give hydrochloric acid without a test-meal. Dead teeth in ulcer cases were extracted after all symptoms had disappeared but before the

patient was taken off a diet treatment. Curettage was advised, but vaccines had not proved satisfactory.

Mr. J. LEWIN PAYNE reported a case of

Replantation.

He showed a patient in whom two replanted teeth had remained for nine years. She had had a fibroid epulis and the two central incisors removed at Guy's Hospital, and the teeth had been replaced after curettage of the alveolus and removal of the pulps. They had been held in place by a metal splint for four weeks, after which the teeth had been firm and the gums healthy. Four years later, although she had made no complaint, an X ray had shown some rarefaction at the roots and there had been some pocketing. She had refused extraction at the time but had finally had the teeth removed. Mr. Payne thought that replantation might be justified in young healthy patients with no previous periodontitis.

In reply to questions, he said that there had been no systemic infection during the period so far as he knew, and that he did not think there would have been any hope of getting pulp reunion in this case though it happened in younger cases.

Mr. W. A. BULLEID described a case in which the replanted incisor had been removed for periodontitis and had remained satisfactory for at least 13 years.

Mr. TURNER said that he had known replanted central incisors last 25 years, and that accidental cases certainly had a good chance.

The PRESIDENT spoke of amateur replantations which were often firm enough but caused trouble by bad alignment.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF PATHOLOGY.

A MEETING of this Section was held on Oct. 31st, when Dr. J. LAIT gave a presidential address on some aspects of

Splenomegaly.

In certain cases, he said, a diagnosis could readily be reached by complete blood examination; this group included leukæmia, Addison's anæmia, leuk-anæmia, von Jaksch's anæmia, erythræmia, acholuric jaundice, and the rare condition of Niemann's disease. In certain reticulo-endothelial diseases the splenomegaly often dominated the clinical picture. Abnormal metabolism or storage of lipoid by the reticulo-endothelial system resulted in the clinical entities of Gaucher's disease and Niemann's disease. Dr. Lait postulated congenital dysfunction of the reticulo-endothelial blood-forming and blood-destroying tissue as the ætiological factors in acholuric jaundice and erythræmia respectively. The parasites of kala-azar were so often found exclusively in the cells of the reticulo-endothelial system, that kala-azar could be called a disease of reticulo-endothelium. Piney's conception of Hodgkin's disease as a reticulo-endotheliosis was an advance. Although the cause still remained obscure, its result was defined. Finally Dr. Lait discussed the evolution of the infection hypothesis of the idiopathic splenomegalies, especially splenic anæmia and Banti's disease, and spoke of Gibson's view that a mycotic organism was responsible for these diseases. He demonstrated specimens of spleen showing Gandy-Gamna nodules in which the organisms have been found, and showed photomicrographs of sections from spleens in which mycelium-like threads were clearly visible. He had also identified Gandy-Gamna nodules in a syphilitic spleen and in a spleen from a case of myelogenous leukæmia.

Dr. T. G. MOORHEAD said he was interested to hear the President's statement that Banti's disease was never hereditary, for the very case on which the President based some of his remarks was that of a boy whose father had suffered from the disease. Dr. Moorhead thought that far too little was known about either the incidence or ætiology of many splenomegalic diseases to justify dogmatic statements. For example, at one time acholuric jaundice was looked upon as purely familial, but later it was recognised that non-familial cases were met with. In the same way Banti's disease was generally regarded as non-familial, but his own experience led him to believe that a familial variety would be recognised before long. As regards blood examinations, he had recently seen in consultation with Dr. William Boxwell a patient suffering from lymphatic leukæmia with some splenic enlargement. An unusual feature of her blood was that the red corpuscles agglutinated almost instantaneously when blood was drawn, so that it was impossible to make films for examination.

Dr. E. T. FREEMAN said he had seen two similar cases—one a case of malignant disease and the other a case of septicæmia in which transfusion was intended but could not be carried out because rapid agglutination prevented a test of the blood.

Dr. R. H. MICKS said that he also had come across two cases in which agglutination had taken place rapidly, one of them a case of pernicious anæmia.

Dr. J. W. BIGGER said he hesitated to label anything as a mycosis. In a recent case he thought he saw a mycelium, but later became convinced that he was looking at the remains of various forms of tissue from which the cells had fallen away and died. Gandy-Gamna organisms were found in a great variety of cases of enlarged spleen, and he could not see how they could possibly be the cause of all the splenic conditions in which they were found. He personally thought that these organisms were only invaders. It was necessary to realise that organisms did invade the body constantly. The blood of the patient mentioned by Dr. Moorhead, whom he had seen with Dr. Boxwell agglutinated at once. He (Dr. Bigger) found that the serum of this patient was capable of agglutinating all types of human blood. As the patient was still alive, agglutination could not be going on in her body, therefore he thought it could only occur in the cold, and he thought this case was parallel to cases of paroxysmal hæmoglobinuria.

Dr. A. R. PARSONS said that Osler looked on splenic anæmia as the first stage of Banti's disease. The speaker was not an advocate of surgery in cases of enlargement of the spleen. He mentioned a case of familial icterus which he had first seen in 1908, and in which he had given medical treatment to the patients, father and son, and they were both quite well still.

Dr. J. T. WIGHAM said it was sometimes stated that patients with Banti's disease usually had quite a small spleen, while patients with splenic anæmia had a large one. He personally thought that this was of no importance, and said that malarial spleens which were big at first got quite small afterwards. He thought the President had not put forward any argument in his paper which would enable one to distinguish between Banti's disease and splenic anæmia.

PUBLIC HEALTH CONGRESS.

THIS congress of municipal associations interested in public health administration, after its formal opening by the Minister of Health on Nov. 17th, was continued throughout the week. We reported in our last issue Sir Arthur Newsholme's address on Medicine and the State. At the morning session on Nov. 20th the chair was taken by Mr. L. G. BROCK, and Dr. THOMAS BEATON opened a discussion on some practical aspects of the

Mental Health Problem.

He sketched the provision made for mental patients in the past and emphasised the lack of any facilities for treatment in the early stages. The work of the psychiatrist, he said, was very much done in the dark, and people did not want to talk of it. He described the three classes of patient—voluntary, non-volitional, and involuntary—and the main principles of the Mental Treatment Act, 1930. The new service, if it was to operate efficiently, must be under experienced guidance, and must be so organised as to give the patient confidence and encouragement. The less the contact with the machinery of officialdom the better. The out-patient clinic should be the first consideration, and should preferably be part of the work of the local general hospital, and under the direction of the medical superintendent of the local mental hospital. Its scope should include mental deficiency, mental and functional nervous disorder, and organic nervous disease. Work of this kind would do more to undermine the old dread of "asylums" than any amount of propaganda, and the clinic should become a centre from which help might be anticipated for any kind of difficulty arising out of maladjustment to life and erratic behaviour. A social service was essential and could be provided by the local Voluntary Association for Mental Welfare, which could serve as a buffer between the patient and his relatives or officialdom. In-patient treatment for voluntary and non-volitional cases could be provided in general hospitals or reception blocks of mental hospitals, but often some new building or modification of existing buildings would be required. More use should be made of convalescent homes. Special mental hospitals and convalescent homes might reasonably be expected to become self-supporting in the course of a few years.

Dr. D. BREWER urged the importance of eliminating the receiving officer, and said that the department of the medical officer of health had now full power to deal with the problem. He believed that ratepayers were more enthusiastic for social measures of this kind than for economy.

Councillor Mrs. SAUNDERS pleaded the case of the mentally affected child in a private school, and Dr. W. A. POTTS urged the importance of the mental breakdown which followed a mild infectious illness after the patient believed that he had recovered. Mr. SCOTT (secretary, Bucks Mental Hospital) asked if the coöperation of the doctors could be assured, and the CHAIRMAN replied that he need have no fear on that score. Dr. H. R. L. ALLOTT suggested that insured persons should all be periodically examined by their doctors and any deficiencies reported to their societies. In this way disasters could be avoided.

Sir HUBERT BOND expressed his agreement with Dr. Beaton, and defended the old Lunacy Acts from the charge of being the sole cause of inadequate treatment in the past. Coöperation with the voluntary hospital was of the first importance, because people would go there. The CHAIRMAN emphasised the importance of social work and referred to its successful organisation in the Hôpital Roussel in France. Miss EVELYN FOX said the workers must be carefully selected and specially trained, so that they could provide the physician with the vital information required for his work. Continuity in the social services was most important; the same worker should deal with a case throughout as far as possible. The success of after-care would be enormously increased if the worker knew the patient in hospital. The work should not be thrust on public health visitors without special training or extra help.

In the afternoon Mrs. HUME PINSENT took the chair, and Dr. E. S. LITTLEJOHN opened a discussion on the

Social Problem of Mental Deficiency.

He briefly sketched the history of the training and care of defectives and described a modern colony, emphasising the happiness and usefulness of a defective under proper care to-day. A certain small percentage were temperamentally unstable or delinquent and should be treated apart, but the majority—85 to 90 per cent.—improved enormously in a suitable environment. During the last nine years inmates had been allowed away from the Manor House colony unattended on 34,000 occasions, yet there had not been a single complaint of behaviour. This showed what supervision and training could do. Mental defectives were a-moral but not immoral; the sexes mixed freely in a colony, but it never occurred to them to be immoral. In a bad environment, however, their suggestibility and facility might cause them to fall. The cost of dealing with the social evils they caused when at liberty was far greater than that of keeping them in colonies. He ran through the features of the Wood report and its recommendations, and then discussed the causation of mental deficiency. Probably about 80 per cent. of it, he said, was due to inheritance, but only about 7 per cent. of defectives had a defective parent; it was carried by the apparently normal and related to adverse factors, such as poisons and injury. Further research was urgently needed. Considerable improvement was to be expected from recent Acts of Parliament and much might be done by an enlightened press.

Sir JAMES HINCHCLIFFE said that the expense involved in providing education for all the mentally defective was quite beyond the means of the country at present. His county had tried to get mental deficiency excluded from the Local Government Act, 1929, as the treatment was still in its infancy. He advocated sterilisation. Dr. F. D. TURNER expressed agreement with Dr. Littlejohn and sketched the stages in the development of the treatment of mental deficients. At one time we had expected to cure them all; an alarmist stage had followed, coming from America after the publication of family histories, and now we were in a socialisation or resocialisation stage. Mental deficiency institutions in the past had been apt to stagnate; in future they must be more fluid and widely distributed, with their main object the passage of the defective back into the world for the low-grade but essential work of which he was capable. He must leave under licence and must not be discharged. Dr. A. W. SIKES agreed with Dr. Turner and declared that true economy lay in putting a stop to the increase of mental defect. Very little was known about the whole problem at present. Dr. J. A. FAIRER did not think there were so many defectives in the country as was often claimed; too

high a standard might be set. The CHAIRMAN emphasised the gravity of the problem, and said that more defectives might be ascertained if school-teachers learned more about them.

On Friday morning the chair was taken by Mr. WALTER HEDLEY, K.C., and Dr. C. P. BLACKER opened a discussion on

Sterilisation of the Unfit.

The Eugenics Society, he said, did not hold that sterilisation should be applied indiscriminately or was in any way a panacea which would abolish defect or that could be an alternative to segregation; it was essentially an auxiliary to segregation. They thought it was applicable to certified defectives, recovered insane, and persons suffering from grave inheritable physical defect. The society had proposed that permissive sterilisation should be carried out on those regarded as suitable by responsible authority. The consent of the individual, the guardian, the spouse (if available), and of the Board of Control was to be obtained. The cautious attitude of the Board of Control was a guarantee that no rash action would be taken. As safeguards to the last category, two independent medical practitioners as well as the operating surgeon would have to give additional consent. The Eugenics Society, therefore, made no ill-considered or far-reaching proposals. Everybody agreed on the simple axiom that it was contrary to public policy that defectives should be allowed to breed. Ignorance of the method of inheritance of mental defect was therefore not a relevant objection to legalising sterilisation. The Board of Control had advocated forbidding the marriage of defectives; the chief object of this measure was to prevent breeding. If we knew enough about inheritance to forbid marriage we knew enough to legalise sterilisation. Legal prohibition of marriage would incite a defective to promiscuity far more efficaciously than sterilisation, for it frustrated two instincts: the sexual and the desire for a stabilised home. Sterilisation could only remove a fear of pregnancy, which of necessity had far less deterrent effect on a defective than on a normal person who was fully aware of the consequences of the actions. It was already legal to sterilise for therapeutic reasons, but the law on eugenic sterilisation was ambiguous and obscure. The operation could be done privately on people who could pay, but not officially; this made it subject to abuse.

Dr. W. F. MENZIES said that there were all shades of opinion in the Royal Medico-Psychological Association, as outside it. If the Eugenics Society were on the left wing of the moderates, the Association might be described as on the right wing. A large body of opinion thought that sterilisation might be made a condition of discharge from colonies or institutions. This would result in a small diminution of defect or "neuronic instability"—say 3 or 4 per cent. There was no evidence that the defective was more fertile than the average man, but everyone agreed that in modern civilisation breeding was taking place from below upwards. In the speaker's personal experience, American opinion was that sterilisation would only touch the fringe of the problem. The real trouble was the carrier. Mental deficiency in a few generations always cured itself. He was not opposed to sterilisation, but did not want his audience to think it would do much good.

THE NEED FOR IMPARTIAL INQUIRY.

Dr. A. F. TREDGOLD pointed out that "unfitness" was much more than mental deficiency. A fit person could earn his living without being a burden on the community and could conform to current standards of behaviour. The most important groups of unfitness were those who constantly ailed, chronic paupers and ne'er-do-wells, habitual criminals and, lastly, the insane and mentally defective. A certain proportion of cases of each type were due directly to environmental conditions, but a very large proportion were the result of inheritance; it was very difficult to distinguish them. Therefore it was quite fallacious to regard unfitness as a clinical entity and to legislate for it in the mass. Mental defectives constituted a serious problem, and in 80 per cent. their condition was due to neuropathic inheritance, but the parental neuropathy was not necessarily—or often—mental deficiency. Sterilisation would not greatly reduce the incidence of defect, although unfortunately there was a strong public belief that it would. Defectives in the upper classes very rarely came from defective parents. Nor would it greatly reduce the cost of defectives to the State; they were ipso facto unable to compete with normal people and any contribution they could make to their own upkeep must be made under sheltered conditions. The best place for the bulk of defectives was the colony; their presence in the nation must always be attended with expense, and they cost less in special institutions than loose among the population.

Propagation by the insane was very much greater than by the defective, and a considerable proportion of their progeny did not come up to normal standard. A far stronger case could be made out for the sterilisation of the insane than for that of the defective; nevertheless many cases of insanity were due to an environmental factor and not to abnormal inheritance. The definition of insanity was made more difficult by the new Act. Nobody would regard sterilisation as suitable for the habitual criminal, but there was much to be said for sterilising chronic paupers if it were possible to distinguish the hereditary cases. The physically inefficient group was responsible for quite as much national expense and deterioration as any other, and in it lay the *fons et origo* of mental deficiency. Here again, however, the trouble lay in distinguishing the hereditary case. Sterilisation was applicable only, therefore, to unfit individuals who could earn their living in the community, whose defect could be shown to be germinal, and whose danger to the race lay in their powers of propagation. The presence in the community of girls known to be sterilised would constitute a danger, as the fear of parenthood did act as a deterrent on young men. No procedure should be embarked on hastily before investigation by a competent and impartial tribunal.

Mr. Alderman LOVSEY (Mental Hospitals Association) said that the man in the street felt that he had not the information he would like on the subject, and demanded an impartial and comprehensive inquiry, preferably through the agency of a Royal Commission. He was bewildered by the abundance of evidence for and against.

Father DAVIS, S.J. (Haythrop College), said that the Catholic point of view had not been officially pronounced, but in his opinion the benefits to be derived from sterilisation would not justify it on rational, ethical, or moral grounds. A man had a natural right to his bodily integrity until he forfeited it by crime; no part of a man's body could be cut off by another man or by the State even for the benefit of others. Voluntary sterilisation was also universally condemned because a man had not the right to dispose of parts of his body except to save the whole.

GENERAL DISCUSSION.

Dr. KJÖLSTAD, who was representing the Norwegian Government, said that the subject was one which was of great interest in Norway.

Dr. W. W. HERBERT said that in time he hoped the biologist would be able to distinguish the carrier from the sound person. He considered that persons discharged from asylums should be warned that they ought not to propagate, should be taught contraceptive methods, and offered sterilisation. An official inquiry was only a way of putting off till to-morrow what we ought to do to-day. The financial question had been stressed, but not the great human suffering to children born doomed to suicide or insanity.

Dr. W. A. POTTS was in favour of sterilisation under proper safeguards, but pointed out the danger involved by the fact that it was being advocated by backward local authorities who hoped it would save them their obvious duty of ascertainment and colony provision. A proper inquiry was needed. Even if sterilisation was only applicable to one-half per cent. of cases, it should be used for them, for every great social improvement began from a small beginning.

The children of a defective mother would never be an asset to the community. Incautious sterilisation of psychotic patients might prevent the continuance of a valuable stock, for mental instability was often closely allied to brilliance.

Councillor Miss PATERSON, J.P., agreed with Dr. Blacker, Dr. Tredgold, and Dr. Potts, but suggested that we were losing valuable stock at present as a result of the limitation of families made necessary by expensive social services such as that of mental deficiency. There was only one real fundamental human right and that was the right of every child to be born with a healthy body and a sound mind. She did not want a Royal Commission; she wanted things done, because children were being born with their birthright taken away.

THE CONGRESS DINNER.

On Wednesday, Nov. 19th, Sir Frederick Willis presided over a dinner to members of the Congress and a large assembly of guests, when a very interesting speech was delivered by Sir Herbert Samuel in proposing the toast of the Public Health Services. Sir Herbert reviewed briefly and clearly the responsibilities of the medical officers in the services, demonstrating clearly the debt which is owed to them by the country. The toast was responded to by Sir Arthur Robinson (secretary to the Ministry of Health), Mr. F. H. C. Wiltshire (town clerk of Birmingham), and Mr. E. S. W. Hart (clerk to the Middlesex County Council). The health of the Chairman was proposed in witty terms by Mr. Alderman A. R. Atkey, J.P., late Lord Mayor of Nottingham. The dinner, which might fairly be styled a banquet, was a great success, and a very large company enjoyed some excellent speaking.

REVIEWS AND NOTICES OF BOOKS

Text-book of the Surgical Dyspepsias.

Second edition. By A. J. WALTON, M.S., M.B., B.Sc. Lond., F.R.C.S. Eng., Surgeon to the London Hospital. London: Edward Arnold and Co. 1930. Pp. 720. 42s.

WE welcome a new edition of this book. Its merits always lay in the fact that the author's views are based upon a large experience carefully analysed. In this respect its value is further enhanced, since the number of cases reviewed is greater, and, indeed, assumes considerable proportions. The reader cannot but attach importance to opinions founded on such a firm basis, and, moreover, the consideration given to the writings of other workers in this field of surgery and medicine shows that the author's reading is wide.

The new edition is thoroughly up to date, and its scope is extensive. Of cholecysto-gastrostomy, which has been recently revived for the treatment of chronic gastric ulcer, Mr. Walton has had unfavourable experience; his verdict will doubtless lessen the current enthusiasm for an operation which seems to have little to recommend it. For very large and adherent ulcers gastro-jejunostomy with perhaps a later excision of the ulcer is recommended. We could find no discussion on the place that should be accorded to jejunostomy in such cases. The book is full of statements of paramount interest to the surgeon, but where some of these are not supported by statistics they are open to criticism. For example, it is affirmed that invagination of the duodenum will stop hæmorrhage whether it comes from an ulcer on the anterior or pancreatic wall of this viscus. That it is usually essential to perform a gastro-jejunostomy when operating upon a perforated duodenal ulcer will not be accepted by everybody, but we welcome the warning against too early removal of the drainage-tube. A very valuable contribution is that dealing with reconstruction of the common bile-duct.

This book ranks high in surgical literature. The sustained effort, extending over many years, necessary to its compilation, the careful correlation of personal observations with the experiences of others is an achievement which has put every practising surgeon in debt to the author.

A Manual of Diseases of the Nose and Throat.

Seventh edition. By CORNELIUS G. COAKLEY, A.M., M.D., F.A.C.S., Professor of Laryngology and Otology in the College of Physicians and Surgeons, Columbia University. London: J. and A. Churchill. 1930. Pp. 672. 18s.

THE purpose of this book is primarily to provide a compact manual on the nose and throat for the needs of students and practitioners. It begins with a short, perhaps too short, chapter on the anatomy of the region, a still shorter one on physiology, and a longer and far more thorough description of methods of examination. The diseases of the nose, naso-pharynx, pharynx, and larynx are discussed as thoroughly as the conciseness of the style allows.

For the treatment of chronic empyema of the maxillary antrum, Prof. Coakley recommends intranasal opening under local anæsthesia with removal of the anterior half of the inferior turbinal, and finds a more radical operation rarely necessary. In the "radical" operation, for which he does not give the indications, he opens the antrum through the canine fossa, and completely removes the mucous membrane

from every nook and corner, stating that any small shred of mucous membrane left will invariably result in failure to secure healing; he makes no opening into the nose, but packs the cavity with iodoform gauze, renewed every four or five days for a month, and obtains complete obliteration in about three to six months; he does not give reasons for advocating this method, which entails prolonged and disagreeable after-treatment and has long been abandoned by most rhinologists. In the treatment of quinsy he advises that the abscess should be opened by means of a stiff bent probe inserted into the supratonsillar fossa, and does not mention the more usual method of opening through the area of bulging in the palate. The operation for removal of tonsils by dissection is well and carefully described, with a clear account of the author's own well-known slip-knot ligature; for the removal of adenoids he prefers the La Force adenotome. In the chapter on the larynx, the well-defined and important condition of multiple papillomata in children receives no mention; though singer's nodules are said to occur nearer to the posterior than to the anterior portion of the vocal cords, the illustration shows the prominences on the vocal processes.

In the section upon malignant disease, intrinsic growths are classified as primary, and those involving the epiglottis and aryepiglottic folds as secondary to extension from the tongue and pharynx, a classification by no means always in accordance with the facts. In a manual of this size the operations for the removal of malignant laryngeal growths are rightly not described, but, in view of the great importance of early recognition by the practitioner, the symptoms and diagnosis of the early stage of the disease might well be more carefully discussed; thus, it is misleading to mention pain as a symptom unless it is emphasised that it only occurs late in the disease. Again, impairment of mobility of the cord is given in more than one place as a diagnostic sign, whereas it is well known nowadays that this sign implies such deep extension of the growth as to render the prospect of successful removal by laryngofissure very uncertain. Attention to the technique of the operation has so improved the results of laryngectomy in recent years that the statement that "few patients survive the operation" is no longer true.

These details, however, little impair the value of the book, which is deservedly popular.

Investigations, mainly on the Physiological Actions of X-radiations.

Conducted for the Cancer Research Committee of the University of Sydney.

Grenz Ray Therapy.

By GUSTAV BUCKY, M.D. New York: The Macmillan Company. 1930. Pp. 170. 15*s*.

THE collection of papers from the Cancer Research Committee of the University of Sydney shows that a healthy state of activity and inquiry is the outcome of the effort made five years ago at the University to stimulate interest in the actions of radiations upon living matter. The papers of most general interest in this collection are those upon the differential action of X rays. This work has been attempted from several sides, Dr. Moppett's observations being the starting-point for investigations of a physical and chemical character into the part played by certain chemical elements in the cells in this differential action. The 17 original papers included in this volume are all genuine attempts at research in a difficult field.

The book by Dr. Gustav Bucky includes contributions by Dr. Otto Glasser and Dr. Olga Becker-Manheimer. In the section written by Dr. Glasser we learn that "Grenz rays are soft Roentgen rays having wave lengths of from 1 to 3 Angstrom units, and are produced in lithium glass X ray tubes with voltages from 4 to 10 kilovolts." These rays are very easily absorbed by all forms of matter; they have been given the name Grenz by Dr. Bucky because he believes them to form a sort of boundary between ordinary X rays on the one hand, and ultra-violet rays on the other. We do not much care for the name. The terms soft X rays or long wave-length X rays have the advantage that they describe some characteristic of the rays, while the term Grenz indicates a boundary that does not exist. These rays have been used by Dr. Bucky and others in the treatment of a number of diseases, not only diseases of the skin. We gather that the development of this form of therapy has been somewhat chequered, for on page 109 the author says: "But even if a method involves risks, a patient may be willing to take a chance at times if he may thus be rid of a protracted, troublesome disease." He continues: "Thus, it is not logical to dump the child out with the bath and arbitrarily to issue the fiat that a therapeutic method must be abandoned because of certain possible aftermaths." The meaning of this is baffling.

Romance of the British Voluntary Hospital Movement.

By A. DELBERT EVANS and L. G. REDMOND HOWARD. London: Hutchinson and Co. 1930. Pp. 360. 18*s*.

THE "Voluntary Hospital Movement" is a very modern phrase, but the authors of this stout volume, to which Sir W. Arbuthnot Lane contributes an introduction, carry it back to the monasteries regarded as hospitals for the sick, and to the refounding, after the Dissolution, of St. Bartholomew's as solely a curative institution. This is a large field to cover, and, on the whole, the authors cover it adequately. They are naturally much indebted to the late Sir Henry Burdett's monumental "History of Hospitals"; a book of this kind intended for more or less popular use must necessarily be, in the main, a compilation. It will tell the specialist little with which he is not already acquainted, but it should be useful as a compendious book of reference.

There was room for a book which should bring together the facts and arguments relating to the progress of the hospital movement in the modern sphere, and especially since the Great War, and much space is devoted to this side of the subject. Thus we have a sketch of the rise of the specialist hospitals, of the work of the teaching hospitals, the creation of scientific nursing, the place of the poor-law institutions, and a discussion of the technical problems affronting the voluntary hospitals, together with an account of such new methods of support as the Hospital Saving Association and the various developments of contributory schemes. The facts and figures thus brought together afford an impressive view of many sides of a great subject, that which relates to very recent legislation not being ignored. What may be called the modern history side of the subject is, indeed, the most useful part of the

volume, which contains a very large number of small illustrations.

The index is full, but by no means complete. We notice certain slips. "Angelnoth," an Archbishop of Canterbury who is supposed to have been flourishing in 1201, is a prelate unknown to history, and the house of the Society of Apothecaries is not in Pilgrim-street. The statement that "the first cottage hospital" was founded at Cranleigh, in Surrey, in 1859 by Mr. Albert Napper, F.R.C.S., is inaccurate. The Warwick Dispensary and Cottage Hospital was founded in 1823; Frodingham Cottage Hospital, in Lincolnshire, goes back to 1844; that at Ripon to 1850, and that at North Ormesby to 1857. The name of the Founder of THE LANCET is mis-spelt more than once.

Modern Skin Therapy.

By H. D. HALDIN-DAVIS, M.D., M.R.C.P., F.R.C.S., Dermatologist, Royal Free Hospital; Lecturer on Skin Diseases, London School of Medicine for Women. London: Jonathan Cape, Ltd. 1930. Pp. 128. 5*s*.

THERE is much to commend in this handy little manual. A lucid and fluent style and an engaging, if slightly cynical, outlook enliven its pages, and hold the reader's attention closely through all the ten chapters. The selection of subjects has been made with a view to meeting all the simpler requirements of the general practitioner. With those requirements in mind it is unexpected to find a long chapter on lupus, which, as the author himself admits, "is in most cases beyond the resources of any single medical man" (p. 59). The treatments of furunculosis intertrigo, carbuncle, scabies, pediculosis, and that ever-present and much maltreated disease—impetigo—are not entered upon, although they may tax the average therapeutic resources, and require expert advice. All that is worthy of consideration in the genesis and treatment of eczema has been described in plain language, and there is a refreshing absence of complicated formulæ. The author's exceptional experience in the application of X rays in the treatment of tinea tonsurans qualifies him to speak on this subject with particular force, and makes his carefully detailed descriptions of the technique he employs of great value. His last chapter on minor surgery includes an account of carbon dioxide freezing and its indications, electrolysis, and the technique for the injection of varicose veins. It is satisfactory to note that in common with nearly all other authorities, Dr. Haldin-Davis unhesitatingly condemns the X ray treatment of hypertrichosis, and reduces the field and indications for ultra-violet therapy to one of honest if diminished proportions.

Bacterial Metabolism.

By MARJORY STEPHENSON, M.A., Associate of Newnham College, Cambridge; Member of the Scientific Staff of the Medical Research Council. London: Longmans, Green and Co., Ltd. 1930. Pp. 320. 18*s*.

AN outline of the essentials of bacterial metabolism has been lacking in British bacteriological literature, and this volume supplies one. The general arrangement is good. The various chapters deal with fermentation, respiration, growth and nutrition, carbohydrate and protein breakdown, and nitrogen fixation, while there is an extensive bibliography at the end of the book. There is, however, great variation in the lucidity with which different subjects are dealt. Many are excellent but a few, like the sections on oxidation, oxidation-reduction potentials, and anaerobiosis—these dealing particularly with the work of Miss Stephenson's own school—are discussed in a confused manner. This is mainly due to undue prominence given to isolated and often unconfirmed data. Happily the author, usually at the end, emerges from the haze with clearer conception, as, for example, in her concluding sentence on the respiration of anaerobes, "notwithstanding much work, however, the main problem of how strict anaerobes live remains unsolved." There are several omissions, particularly of work done by British bacteriologists on anaerobes and hæmophilic bacteria. This is doubtless due to the fact that the source of much of the author's information does not refer to British work. We could find no reference to the nature of toxins or their production. Apart from these defects, Miss Stephenson has succeeded in preparing from a heterogeneous accumulation of bacteriological data a volume which is a useful summary of the present-day knowledge of bacterial metabolism.

Del Ringiovanire Diatermico.

By Dr. GAETANO ZUCCHI. Milano (132)—Viale Romagna N. 58. Soc. An. Istituto Editoriale Scientifico. Pp. 240.

THE author of this monograph holds the opinion that the changes accompanying old age in men are caused by deficiency in the internal secretions of the testicles, and maintains that these changes can be prevented by applying diathermy to these glands. Believing, as he does, that there is no real kinship between man and the anthropoid apes, Dr. Zucchi believes that Voronoff's transplantation is unscientific. He also criticises Doppler's operation (sympathicolysis of the spermatic artery) as dangerous. He describes some work which he has conducted on the application of diathermy to bull's testicles for the purpose of ascertaining the conductivity of gland tissue of this kind and of devising a suitable technique. In the human testicle he has observed that the senile gland offers a lower resistance to electricity, and that diathermy increases it. He thinks that this increase may serve as a prognostic index of clinical improvement. The benefits which are claimed for testicular diathermy are great. They are said to appear, in some cases, after the first treatment, and in all cases after six to eight applications. The asthenic, the nervous, the irascible and the depressed are said to show best the effects of the treatment. Greater elasticity is said to be observed in the arteries. The author states that testicular diathermy has been successfully combined with hepatic diathermy in enlargement of the liver in immoderate drinkers; and that good results follow the former treatment during convalescence after influenza. In aged diabetics the glycosuria is said sometimes to disappear.

Apart from its use in cases of infection of the contents of the scrotum, diathermy has not been systematically applied in this country to the testicles of those who are the subjects of disease—not, at any rate, when the glands are clinically normal. Until the results obtained by Dr. Zucchi have been confirmed by other workers it is likely that English workers will remain sceptical. The electrodes used, which are protected by patents, are described and illustrated. Their cost is stated, and those who subscribe to the monthly journal *Le Indicazioni della Diatermia* can have them at a reduced price.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 29, 1930.

THE NEXT STEP IN MENTAL TREATMENT.

ON Jan. 1st the Mental Treatment Act will come into operation, and with it the facilities for the early treatment of mental disorders which have long been demanded by the medical profession. It is true that Parliament has hedged these facilities with safeguards which have been embodied in the rules framed by the Board of Control. Some of the safeguards will prove vexatious; they are however consequences of the Act and cannot be helped, and if the practitioner is inclined to resent them he must remember they are the price paid for getting the Act on the Statute Book. It is futile now to grieve over the prejudices which caused these limitations, the more so as the Act is a great forward step; for it will benefit persons threatened with mental illness and at the same time make it easier for the practitioner to give advice when called in. Three features of the Act are especially important to medical practitioners: (1) the extension of voluntary means of treatment; (2) the provision of temporary treatment in early cases; (3) the additional protection given to the practitioner himself.

For the first time in this country public mental hospitals will be able to admit persons who apply for treatment at their own request. In most of the institutions receiving private patients able to pay for treatment a larger number are admitted voluntarily than under certificates; this discrimination between rich and poor will now cease. It is unfortunately true that most existing public mental hospitals are already over full, and until more accommodation is provided complete advantage cannot be taken of the Act. Nevertheless, if even a few patients are so received, the fact will have a good effect; it will tend to remove the feeling of detention, and give to the patients generally a better realisation that the hospital is a part of the health service of the community. A stream of voluntary patients will do much to lessen the prejudices that now exist. But the Act goes much further than this: voluntary patients subject to certain regulations can be received in general or special hospitals and nursing homes previously approved by the Board of Control. It may be thought at first sight that there is nothing new in this, that voluntary patients have always been allowed to go where they like, and that the approval by the Board is unnecessary. It should however be recalled that Section 315 of the Lunacy Act, 1890, is not repealed, and that anyone receiving persons of unsound mind for profit is liable to prosecution unless the patient is certified as such. All those who have had the care of persons with threatened mental disease know it is impossible to be sure that patients will not lose self-control or become irresponsible, and the natural and proper desire to do the best for them may frequently mean infringement of this section. In cases such as this the patient may be willing to sign a paper saying he is remaining voluntarily. It is not expressly stated in the new Act that the holders of voluntary patients are exempt from the provisions of Section 315, but the fact of the case having been notified and that the home or house has been approved makes the position sufficiently secure. The requirement that nursing homes receiving voluntary patients should be approved by the Board will have a salutary effect; many existing places of this kind are inadequately staffed and possess few resources for dealing with these difficult cases. There remains one difficulty under the new Act which cannot be ignored: patients and their relatives may object to signing any paper or formally making application for treatment on a voluntary basis. In practice, however, it is rare for the patients fit to be received in this capacity to object when the position is candidly explained. It must not be forgotten that by voluntary patients are meant persons who understand their position and who wish to be treated. Although many of those who will be dealt with under this section are recent early cases, it is not intended to limit voluntary patients in this way. On the contrary, many of them will be persons long subject to milder forms of mental disorder, or liable to relapses, but who possess insight and realise their need of care and treatment.

The section of the Act dealing with temporary patients introduces an entirely new principle in English legal practice and promises to be of great benefit to large numbers of persons. In future it will be possible to obtain treatment for all suffering from recent and even severe mental disorder without formal certification and without any application to a magistrate, provided the patient does not object. He may be utterly confused or delirious, but if for the time being he is "incapable of expressing himself as willing or unwilling to receive treatment" he may be received as a temporary patient in a public mental hospital, a registered hospital, or in any other institution or home approved by the Board of Control for the purpose or into single care with the consent of the Board. The patient may remain under treatment for six months, which may under certain circumstances be extended for another six months. The Act prescribes conditions under which temporary patients can be received, and it is important that practitioners generally should be familiar with them. An application must be made by a relative or other authorised person. The application must be accompanied by two "recommendations" signed by medical practitioners, one of whom should if possible be the usual medical attendant, and the other must be a medical man approved by the Board of Control. In this instance (con-

trary to the procedure under the Lunacy Act) the medical men may act in consultation. These recommendations must state that the patient is suffering from mental illness and is likely to benefit by temporary treatment, and that it is expedient with a view to recovery he should be received for treatment. The prescribed forms for the application and recommendation will be obtainable from law stationers, and it is desirable for medical practitioners to procure these in advance. Hospitals and homes, other than public and registered mental hospitals, receiving voluntary and temporary patients, have to be approved by the Board. There is every reason to believe that a large proportion of recent cases may never be certified and many will recover without having been termed insane. But this happy event will depend a great deal on whether an approved home can be found which is not too costly, and in default of this whether the local authority has accepted its obligations under the Act and made provision for these cases. It is to be feared that in many localities for some time to come this will be inadequate, although the Board have already had several conferences with local authorities and hospital committees urging the necessity for action in this direction. In deciding the principles on which medical practitioners should be approved for the purpose of making recommendations under the Act, the Board have had the assistance of a committee whose chairman is the President of the Royal College of Physicians, and we have recently published a letter from the chairman of the Board pointing out the importance of obtaining a large enough panel of approved medical men to cover the whole country.

There remains the all-important question of the protection given to the practitioner who makes the recommendations. Whilst it is impossible to foresee the ingenuity of lawyers in bringing action against medical men, nor the extent to which members of the medical profession can be persuaded to give evidence against their colleagues, there is good reason to believe that the sixteenth section of the Act will afford a real protection against legal proceedings being brought against practitioners who sign recommendations under this Act or certificates under the Lunacy Acts. This clause came into force with the passing of the Act, and in future the onus of proving want of reasonable care and good faith rests on the plaintiff, and no proceedings can be brought without the leave of the High Court. The effect of this clause should restore to the medical profession that sense of security which will ensure its coöperation in working an Act which is a great step forward in medical practice, for when it is working fully large numbers of persons suffering from mental illness will be treated to recovery without any certificate that they are of unsound mind. The duty of making provision for the treatment of temporary patients will be thrown upon the local authorities. The Act will in fine make it easier to secure early treatment and at the same time will do much to make this treatment adequate.

THE GROUPING OF FILTRABLE VIRUSES.

IT was near the end of the nineteenth century that LOEFFLER and FROSCH set on firm ground the evidence of ultramicroscopic and filtrable parasitic viruses which were pathogenic for animals. The filtrable virus of tobacco mosaic was described in Russian literature by IWANOWSKI in 1892 and was rediscovered by BEIJERINCK in 1898. To these two virus diseases were added in the next 20 years a number connected with plant pathology and some 40 infections of animals. Although outstanding examples of this category were carefully studied between 1898 and 1920, much greater attention has been given to viruses during the last ten years. Fresh members are being constantly added to the group. Some of these—e.g., ectromelia, the gangrenous disease of mice, and psittacosis—have arrived too recently to be included in the seventh volume of the System of Bacteriology [1] published by the Medical Research Council, which deals with some 48 diseases of mammals and birds, of which 21 do not occur in man. The exact number at present known is uncertain, since some are not completely differentiated—e.g., the pock diseases of animals; moreover, the propriety of including certain others—e.g., pleuro-pneumonia of cattle and typhus fever—in the virus category is open to question. An attempted definition and general survey of the whole group is presented by Prof. J. C. G. LEDINGHAM and Dr. W. E. GYE in a valuable introductory chapter in which many of the characteristic features of viruses are discussed, including the types of immunity reaction and the epidemiology.

It must be acknowledged that the members of the group are heterogeneous and held together largely by negative characters which are not universally applicable. Invisibility cannot be accurately attributed to the microbe of pleuro-pneumonia of cattle or the rickettsia of typhus and the elementary bodies of Paschen in vaccinia; while those of Borrel in fowl-pox have considerable claims to be considered as visible particles of the virus. Filtrability of virus, though in some instances of a high order, is now regarded as variable in degree in many instances and is not always a measure of the size of the particles of virus, although filtration through collodion membranes has been made much more exact by the work of BECHHOLD, BARNARD, and ELFORD. The third chief criterion of a virus—i.e., inability to multiply in artificial culture media—does not apply to the agent of pleuro-pneumonia, and the propagation in cultures of tissues which do not themselves show active growth, as in the Maitlands' cultures of vaccinia, indicate that the line of demarcation between growth in dead and living media may not be very sharp. In some diseases provisionally included in the group by analogy a communicable virus has not yet been generally accepted as proven. Amongst these are encephalitis lethargica and the encephalitis following

[1] A System of Bacteriology in Relation to Medicine. Vol. VII. Medical Research Council. London: H.M. Stationery Office. 1930. Pp. 509. £1 1s.

vaccinia and measles. The collection of the whole together in one volume is, however, justified by convenience and usage. The well-known cell inclusions characteristic of some virus diseases—e.g., rabies, variola—are well dealt with and discussed critically in a separate chapter by Dr. R. J. LUDFORD. The volume contains chapters by 28 different authors, most of whom have made experimental study of the subjects of their contributions. Those diseases on which much recent work has been done, such as dog distemper, yellow fever, foot-and-mouth disease, typhus, and vaccinia are given most space. The diseases of lower animals are amongst those which have yielded the chief additions to knowledge of general importance. Even such an item as virus III. of rabbits, with apparently remote relation to human medicine, is shown to take its part in elucidating immunology, cell-inclusions, and methods of culture. The immunity phenomena in virus diseases are treated in the special chapters as well as in the introduction, and the results obtained suggest less difference from those known in diseases due to bacteria than at one time seemed probable. Antibodies which neutralise the virus have been obtained in vaccinia, herpes, foot-and-mouth disease, cattle plague, fowl-pest, swine fever, Borna's disease of horses, poliomyelitis, and in other instances. Formolised or carbolised virus, which is not infective, has been proved to give specific protection in varying degrees, when used as a vaccine, in rabies, foot-and-mouth disease, distemper, fowl-pest and yellow fever.

That the so-called virus diseases present points of contact with many diverse pathological conditions needs no proof. The properties of the infective extracts of the Rous sarcomata are shown by Dr. GYE to resemble closely other viruses, and the resemblance of these tumours to mammalian new growths is well known, though not insisted on in the chapter here cited. The much-contested relations between the strains of *B. proteus* X and the virus in the typhus group of diseases is fairly discussed by Dr. A. FELIX, especially with reference to the new facts in regard to the forms of tropical typhus and sporadic typhus in the United States, though the author's own views are not concealed. The volume closes with a chapter of 44 pages by Dr. F. M. BURNET on the bacteriophage and allied phenomena. He describes and discusses the fascinating and complex results of experiments, but leaves unsettled the question of the parasitic nature of the phage, though admitting that the objections to D'HERELLE'S well-known view of it as a living independent agent are based on general and theoretical considerations rather than on directly opposing facts. Dr. BURNET considers that the therapeutic value of phage is not established except in fowl typhoid but that suggestive results have been obtained in some other diseases. The results claimed by D'HERELLE in cholera are very good but are not unchallenged. A chapter which will be very welcome to animal pathologists is that in which Dr. J. HENDERSON SMITH briefly and clearly describes the position as regards virus diseases of plants. Dr. R. ST. JOHN-BROOKS gives a short account of diseases of insects which are due to viruses. This volume of a great work well fulfils its purpose, providing a critical statement of present knowledge without undue emphasis on the past stages through which progress has passed.

CHANGING SURGERY.

FROM time to time some of the greatest surgeons have expressed a belief that surgery had reached the limits of efficiency as a method of treating disease; and yet as the years pass we cannot be blind to the fact that surgical craft and surgical science have made great strides. The delicacy of technique of the average abdominal surgeon is immeasurably superior to that of his predecessor of 25 years ago. He has recognised that it is vital to conserve every possible drop of blood, to prevent undue exposure of the viscera, to diminish the afferent nocuous nerve stimuli, to avoid the sacrifice of efficiency to speed without prolonging the operation a moment beyond what is absolutely necessary; and the recognition has made it feasible to resect large parts of the stomach and colon almost with impunity even in the aged. This being so, the fact that we have no knowledge of the future, no vision of the direction in which craftsmanship may advance, does not justify us in predicting that no change for the better can or will take place. Unforeseen technical advances in collateral sciences can often be adapted for use in surgery. A rapidly alternating diathermy current has rendered possible the ablation of certain brain tumours which a few years back were considered inoperable, as their removal was liable to be accompanied by uncontrollable hæmorrhage. The diathermy cautery has made vastly more simple and safe the extirpation of tumours in the tonsillar region. We need not suppose that the technical side of surgery has reached finality.

Nevertheless Mr. C. H. FAGGE has done well to call attention in a presidential address[1] to one important factor in limiting the field of surgery—namely, the small power of repair of specialised tissue. So long as the repair of a wound is due to proliferation of fibrous tissue an impassable barrier of scar tissue will result: thus the best we can do to cure a hernia is to leave a scar where actually contractile muscle should be, and, because of the small power of regeneration of organs and tissues, surgery largely consists in the ablation of diseased parts of the body. Surgery is, in fact, a mutilating method of treatment, for from its very nature surgery is often called upon only when treatment short of removal of the offending part has failed. Medicine is ever searching to anticipate and render unnecessary the use of the knife; every thoughtful surgeon is aware that his science is an ephemeral thing, bound to give way to less violent measures with the advance of knowledge. It is a welcome portent that such realisation is becoming more general on all sides; yet the natural limitations of surgery are not perhaps so strict as Mr. FAGGE would have us believe.

[1] THE LANCET, Nov. 15th, p. 1072.

Elastic fibres will penetrate a scar, epithelium regenerates, many large gastric ulcers heal with so much reconstitution of the stomach wall that their former situation becomes almost impossible to perceive post mortem. In other mammals large portions of muscular tissue have been removed and the muscles have regained their normal size. Motor nerves which have been divided and implanted into muscle have been observed to form new end-plates. The parietal loculi of the common bile-duct have hypertrophied after cholecystectomy to the extent of giving the animal a new gall-bladder as far as function goes. It cannot be denied that regeneration will take place in the kidneys. May we not still hope that, as the result of some new discovery, the fibrous barrier we now obtain in the most aseptic wound will be reduced to a vanishing-point, and ultimately cease to be a barrier at all?

Meanwhile it is all to the good that the limitations of surgery in its present stage of development should be fully realised. The prevalent tendency to restrict the extent of surgical intervention is also good, for the safety and ease with which the surgeon has learnt to remove organs or large portions of them has sometimes led to too radical an outlook. New conceptions arising from more intimate knowledge of disease have restricted the operations of surgery in many septic affections such as acute osteomyelitis, cellulitis, carbuncle. We are entering, in Lord MOYNIHAN'S words, the era of physiological repair by the craft of surgery. Diligent search is being made to substitute some method less radical than cholecystectomy or partial gastrectomy for cholecystitis or gastric ulcer. It is in such studies that surgery advances and technique becomes finer, so that it may be used to greater advantage on the fewer occasions when intervention is necessary—witness especially the progress in thoracic and cranial surgery. In the future no doubt the number of operations will lessen, while the field of surgery will enlarge so as to include what are now regarded as medical diseases. It may be that the present-day distinction between physician and surgeon will disappear, and one individual will combine the knowledge and technical skill of both, to the great benefit of the healing art. In neurology this has already happened. In the case of the organs of special sense it has always existed.

ANNOTATIONS

THE EASTMAN DENTAL CLINIC.

THE opening of the Eastman Dental Clinic on Wednesday of last week is an important event in the record of the efforts made to provide for the dental needs of the children of London. For a long time the only institutions available for the care of children's teeth other than extractions were the dental hospitals, and if time and distance had not limited the attendance they would have been overcrowded. The institution of a large number of clinics in London and its suburbs by the London County Council has made conservative dentistry accessible to large numbers of children, but as the scheme is far from being comprehensive or complete, the important work of treatment of defective growth of the jaws and abnormalities in position of the teeth is scarcely attempted, and these conditions, together with the treatment of diseases of the gums and some surgical affections of the jaws, form a very valuable part of the work of the special dental hospital. Mr. Eastman's object is to demonstrate, in a particular area, the beneficial effects on health of thorough and complete preventive and remedial treatment of the mouth and teeth from the earliest years. For this purpose the sumptuous building and equipment generously provided by Mr. Eastman are more than adequate, and the maintenance has been guaranteed by Lord Riddell and Sir Albert Levy, the chairman and honorary treasurer of the Royal Free Hospital, which the new building adjoins, and with which it is closely associated as regards management and contact. The orthodontic department is to be a special feature, and will go far to meet a growing demand for the treatment of the various forms of abnormal jaw development, which are more intimately connected with general health than is sometimes appreciated. Further possible developments of the clinic leap to the mind. Its association with the Royal Free Hospital suggests a school for the training of women dentists, but for that purpose certainly a child clientèle only would not be adequate. For the training of dental nurses for employment in school clinics throughout the country the institution offers good facilities and the employment of such assistants to school dentists, with strict limitation of function, might well be more extensive than it is; but until the demand develops it would obviously be unwise to train more than can be easily absorbed. Another possibility is research, for which there will clearly be ample accommodation and equipment, and probably clinical material which it would be a pity to waste.

RESEARCH ON THE COMMON COLD.

EARLY in 1928 the John J. Abel fund of $195,000 was established in the medical school of Johns Hopkins University for research into the cause of the common cold. The first definite results from this research are reported in the current proceedings of the Society for Experimental Biology and Medicine.[1] Healthy young women volunteers were secured for the experiment. They were isolated with great care from all chance infection. The experiments, moreover, were carried out in the months of June and July, 1930, when the incidence of colds in Baltimore was at a low level. Nasopharyngeal washings were taken from persons who were in the first 48 hours of a common cold infection. Half of each washing was put through a Berkefeld V candle and in each case the filtrate contained filter-passing anaerobes. The other half was filtered either through a Berkefeld W candle or an improved Seitz filter, when all attempts to demonstrate micro-organisms, either aerobic or anaerobic, in these filtrates failed. The experimental subjects were inoculated intranasally and the pharynx swabbed with small quantities of the same filtrate. In the first group of ten volunteers half received Berkefeld V filtrate and half Seitz filtrate. Two subjects in

[1] Long, Perrin H., and Doull, James A.: Etiology of Acute Upper Respiratory Infection (Common Cold).

each group developed colds. From one of the latter serial passages were made through Seitz filtrates to two other volunteers. In another experiment three successful transmissions were made in series through Seitz filtrates and a fourth passage was made through a Berkefeld W filtrate. These observations confirm and extend previous work, tending to prove that the infection of the common cold is due to a filter-passing virus incapable of growing on any known culture material.

THE CAUSES OF HOOKWORM ANÆMIA.

AN adequate answer to the question of what causes hookworm anæmia has been brought nearer through independent investigations by A. J. Huart of Leiden,[1] and by F. Fülleborn and W. Kikuth of Hamburg.[2] Huart infected dogs with very many larvæ of *Ancylostoma caninum* and *A. brazilien-e*. Blood appeared in the fæces on the ninth day, sometimes amounting to a bloody diarrhœa; while after death the intestinal contents varied from a blood-stained mucus to large amounts of clotted blood with the underlying mucosa sown with bites. Whether blood was found in the hookworms themselves depended on the interval between the death of the host and the examination. If the latter was delayed the worms were free from blood; if it was made immediately after death the great majority of them contained it. Now G. H. Whipple showed over 20 years ago that a blood-filled hookworm placed in water could be watched rapidly expelling blood, so that whether in Huart's dogs the intestinal blood had mainly been swallowed and promptly wasted by the worms, or had mainly come from their abandoned and oozing bites, is immaterial for the present purpose. In these grave hookworm anæmias, produced by as many as 3000 worms in young dogs of 3 kg., there was severe bleeding into the intestinal lumen. How severe such bleeding may be is shown in the case of one of the Hamburg dogs which died of an acute hookworm anæmia due to *A. caninum*. Its bowels had not been opened for three days. The iron found in its intestinal contents corresponded to 455 g. of the impoverished blood then in its vessels, or to one-eleventh of its body-weight. This presumably represents the drain produced by 1100 worms in three days. There is, then, no question that in these acute hookworm anæmias bleeding occurs into the intestine in great quantity. To conclude that it does not occur in chronic cases is unwarranted. It is noteworthy that viewed as food for the worms the whole of this intestinal hæmoglobin was sheer waste. Clayton Lane has, however, found iron in the intestinal wall and body wall of the hookworms of man, so that, in addition to wasting hæmoglobin, they use it. Indeed, the food required by rapidly growing worms and by adult females laying 6000 to 10,000 eggs daily must be considerable, and it may confidently be concluded that hæmoglobin forms part of it. Blood is used as well as extravagantly wasted by the worms.

The Hamburg work, moreover, showed abundance of pigment in spleen and bone-marrow, the liver being unmentioned in this respect; and although in this instance no iron could be found in the liver, the pigment found in spleen and marrow must have been derived from hæmoglobin just as malaria pigment is so derived. In malaria, another great cause of anæmia, there is destruction of red corpuscles in the circulation. Do hookworms produce a toxin which destroys red corpuscles in the circulation? That hookworms do in fact produce toxins is shown partly by the eosinophilia which normally accompanies their presence, and partly by the intense degeneration with casting of the epithelium found by Hoeppli of Hamburg in the convoluted tubes of the kidney of dogs in acute hookworm infection. As to what particular toxins the worm produces, evidence steadily accumulates that anticoagulins are present in its anterior part—namely, that part containing the large glands which open in or close to the mouth. This strongly supports the view that blood is the essential food of hookworms, that they function as miniature leeches. But for the presence in them of a hæmolytic substance evidence is conflicting, and after their fresh experiments Fülleborn and Kikuth leave the matter open. But, as Huart notes, hæmolytic substances can be demonstrated in alcoholic and ethereal extracts of all normal organs. Furthermore, the Hamburg investigators fed mice with dozens of hookworms each, or injected them with their fresh or dried extracts to an extent which represented as many as 300 worms apiece, without producing the least anæmia. Acute hookworm anæmia is, then, essentially due to the grave intestinal hæmorrhage which accompanies it, yet in view of the damage produced in the kidney, it is rash to brush aside toxic action as a contributory cause.

As regards the more usual chronic anæmia, it is equally unreasonable to brush aside bleeding as a negligible factor in its causation. On the other hand, the toxic changes in the kidneys in acute canine cases are strongly reminiscent of those noted for man by B. K. Ashford and his colleagues in their report on the Porto Rico Anæmia Commission for 1905–06. Fresh evidence for the effects of this toxic renal damage seems to be offered by the observation of A. W. and J. N. Taves, quoted by A. A. Osman,[3] on the value of alkaline therapy in reducing the time needed to remove the gross lymph effusions of grave hookworm disease, so allowing this condition to be viewed alongside ordinary chronic parenchymatous nephritis. There is, then, abundant evidence of toxic damage in both acute and chronic hookworm infection, and its consequences should attract investigation; but there is no evidence that it is the important factor in causing hookworm anæmia, and in some circumstances there is clear evidence that it is not.

[1] Acta Leidensia, 1929, iv., 48.
[2] Archiv f. Schiffs- u. Trop.-Hyg., 1929, xxiii., 171.

GEOGRAPHICAL INCIDENCE OF DIABETES.

Dr. C. A. Mills of Cincinnati has made a survey[4] of the incidence of diabetes mellitus in various countries. He finds it uncommon among the Chinese, in whom it is mild and accompanied by supersensitiveness to insulin. It is mild also, he says, in Japan and in India except among the wealthy leisured classes. It has been observed that the incidence is greater among Chinese who forsake their native diet for European foods, and among Irish inhabitants of Boston, emigrants from a country where the incidence is low. Dr. Mills thinks the incidence is largely affected by climatic conditions, and has collected figures which show that in the U.S.A. the diabetic death-rate is lowest in the southern States, while the western plateau and mountain States come next, followed by the northern States from Michigan west, the middle States from the Atlantic to the Pacific coasts, and finally the north-eastern States, with a rate 2·2 times as high as that of the southern group. That this cannot be explained on racial grounds has been shown by Lehman, who found that diabetes was as prevalent among negroes in the south

[3] THE LANCET, Nov. 1st, p. 945.
[4] Arch. Internal Med., Oct., 1930, p. 569.

as among white people. The further members of the negro race are taken from their natural tropical environment the higher becomes the death-rate from diabetes. In Canada the incidence seems to be considerably lower than in the United States, but there is the same variation in the diabetic death-rate from east to west as in the northern States. In Europe the distribution of the death-rate is peculiar; all the countries above the fiftieth parallel, with the exception of Ireland, have a diabetic death-rate above 9·6, while all below that parallel have a lower rate. Moreover, the rate is said to be increasing much more rapidly in the northern European countries than the southern. In Asia the rates were found to be considerably lower, where they could be obtained, being 3·19 in Japan, 2·7 in the Straits Settlement, and 6·5 in Ceylon; in South America the rate is everywhere low. In summarising his observations, Dr. Mills points out that the death-rate from diabetes seems to increase with the distance from the equator; the apparent exceptions of Japan and northern China he finds explicable on the grounds of their long tropical summers. He thinks it undoubtedly true that some races, notably the Chinese, are more prone to the disease if they forsake their native food for a foreign diet containing more sugar; but he considers the racial factor as a cause of varying incidence may be discarded, on the grounds of the difference in the diabetic death-rate between negroes in the northern and southern States, and between Irish in Boston and Ireland. In a further paper dealing with the relation of sugar consumption to the ætiology of diabetes mellitus, Dr. Mills recorded that he was unable to find any constant connexion between the two.

DENTAL CARIES AND DIET.

THE Committee for the Investigation of Dental Disease reports[1] an investigation by Mr. A. Deverall and Miss M. Reynolds into the influence of dietetic measures on the incidence and progress of caries in children's teeth. The investigation, which is under the supervision of Mrs. M. Mellanby and Dr. H. C. T. Langdon, has been in progress for nearly three years, and it is now possible to give some indication of the results which are being obtained. The total number of children under observation is approximately 860, housed in three similar institutions outside Birmingham. These were formerly under the poor-law authority, but are now under the local education authority. The ages of the children vary from 2 to 16 years. The basal diet is, on the whole, similar in all three institutions, and is one that would be generally regarded as thoroughly adequate. There is no significant difference in the character of the districts from which each institution draws its supply of children. The children have been grouped as follows for purposes of supplementary diet:—

(*a*) No addition to basal diet ..	20	children.
(*b*) Vitamins A and D (cod-liver oil and Radiostoleum)	225	,,
(*c*) Vitamin A (prepared from mammalian liver)	16	,,
(*d*) Vitamin D (Radiostol)	224	,,
(*e*) Olive oil	136	,,
(*f*) Treacle	261	,,

Every child is submitted to a detailed dental and physical examination at intervals of six months, the findings being carefully recorded. The data which have been accumulated up to the present time relate for the most part to children whose temporary teeth, with many of the permanent teeth, had already erupted at the beginning of the investigation, an average of about 19 per cent. of the teeth being already carious. This proportion was similar in all groups. The figures relate therefore to the influence of diet on the progress of caries in teeth which are already formed, and not to the effect on teeth in course of development. It was found, after four inspections representing one and a half years, that the percentage of teeth developing caries during this period in groups (*b*) and (*d*) was approximately half that in the control groups.

[1] Minutes of the Dental Board of the United Kingdom, November, 1930, Appendix IX., p. 12.

BRONCHIAL OBSTRUCTION.

WRITING on the mechanism of physical signs, Dr. Chevalier Jackson[1] discusses the signs produced by partial or complete bronchial obstruction by foreign body or neoplasm, and recognises three types of bronchial obstruction as follows: (1) The stop-valve obstruction, in which the bronchus is completely blocked so that no air can get either in or out, with the result that the residual air is absorbed and collapse of the affected portion of the lung follows with the usual signs of dullness, absent breath sounds, and displacement of the mediastinum to the affected side. (2) The check-valve obstruction can be demonstrated by bronchoscopy and may prevent the flow of air from entering the lung, but allow it to re-escape, thus producing atelectasis, or by acting in the opposite direction air can enter but not leave the lung, so that an area of emphysema is produced. Sometimes when a tumour is situated near the bifurcation of a bronchus it will block one branch during inspiration and the other during expiration so that the part of the lung supplied by the bronchus which is blocked only during inspiration will collapse, but the portion of lung supplied by the bronchus which is blocked only during expiration will become emphysematous. (3) The by-pass valve obstruction. Here the bronchus is only narrowed so that some air can enter and leave. An asthmatoid wheeze is heard at the open mouth of the patient in many cases though not audible at the chest wall.

One type of obstruction may alternate with or follow another and this can be seen by bronchoscopy. The importance of this method of examination and of treatment through a bronchoscope is becoming more recognised and the paper will be useful to those interested in this branch of medicine.

[1] Jour. Amer. Med. Assoc., Aug. 30th, p. 639.

BOVINE TUBERCLE BACILLI IN HUMAN PHTHISIS.

SINCE the two types of human bacilli have been clearly differentiated, almost all investigations have gone to show that ordinary adult phthisis is caused by the human bacillus and that for practical purposes the bovine bacillus may be ignored. In the current number of the *Journal of Pathology and Bacteriology* (vol. xxxiii., p. 1145) Dr. A. Stanley Griffith has collected together the available information which puts rather a different light on the question. In 926 examintations made in foreign countries all yielded human bacilli, which in three instances were mixed with bovine bacilli. The English investigations, mostly made by Dr. Griffith and his colleagues, showed three examples of bovine bacilli in 327 sputa tested. On the other hand, in recent years, Dr. W. T. Munro, of the Glenlomond Sanatorium, and

others in Scotland, have found quite a surprising number of bovine infections.[1] Of 468 cases, 450 yielded human bacilli, 17 bovine bacilli, and 1 both. In a number of cases the bacilli were isolated from the sputum and tested on more than one occasion; a number were also tested by Prof. W. J. Tulloch. In two fatal cases autopsies were obtained and bovine bacilli were obtained from the lungs. There can, therefore, be no doubt that a fair proportion of cases of ordinary adult phthisis in Scotland are due to the bovine bacillus. The mode of infection is more difficult to be sure of. No evidence was obtained that any of the patients had acquired infection from a previous case. The clinical histories indicated rather a primary alimentary infection though, as Dr. Griffith points out, bovine bacilli are known in children to infect occasionally through the respiratory passages. If bovine infection accounts for 4 per cent. of cases of phthisis in Scotland, it is easier to understand how they may get into a fresh person by inhalation. The disease produced is not clinically differentiated from that caused by the human bacillus. Previous work has shown, though not very clearly, that bovine bacilli are relatively more important in other forms of tuberculosis in Scotland than in England; these new figures provide further reason for looking to the dairying industry.

READING IN HOSPITAL.

FROM the needs of wounded and interned soldiers during the war arose a keen realisation of the importance of books to the sick and unoccupied. The Red Cross War Library grew out of the work of Mrs. Gaskell and Mr. Hagberg Wright, and after the Armistice the joint council of the Order of St. John and the Red Cross granted a capital sum for the supply of books in hospitals, primarily to ex-Service men. The work has steadily extended to the civil population, and now over 2000 hospitals are supplied. Thanks to public gifts in money and kind, to the voluntary work of collectors throughout the country, and to volunteer workers in the wards and at the Central Library at Lancaster Gate, this service has hitherto been provided without any charge to the hospitals, but the time has now come when the organisers are obliged to make an appeal for assistance. We reported not long ago[2] a conference at Cambridge of members of the Library Association; the subject was discussed again at a meeting in connexion with the Public Health Congress last week. Dr. H. L. Eason urged the great importance of the personal distribution of books by a skilled librarian or voluntary worker, preferably somebody outside the ordinary routine of the hospital. Patients, he said, would not be allowed to help themselves indiscriminately from their medicine bottles, and the books should be given out to them by somebody who knew both book and patient. The President of the College of Nursing assured the meeting that if nurses had been an obstacle in the past they were so no longer, and the hospital librarian would receive a cordial welcome everywhere. Mr. C. E. A. Bedwell, house governor of King's College Hospital, suggested that if the nurses were now educated it was time to go on to the education of the chaplains, in whose hands the distribution of literature so often lay. Still more important, and certainly more delicate, is the provision of books for patients in mental hospitals, who have to spend many months in the limited social environment of their ward. Their case was eloquently put by Mr. L. G. Brock, chairman of the Board of Control, Dr. Doris Odlum, and Miss E. L. Macaulay, all of whom emphasised the great therapeutic value of reading and the necessity for a supply of clean and up-to-date books, distributed by a librarian with some psychological training. Fashions in thrillers and love stories change almost as quickly as fashions in hats, and patients will not read the popular books of the generation before last. Dr. Odlum pointed out that many of the patients in these institutions would be subscribers to public libraries if they were at home, and she suggested that some arrangement should be made with the librarians for the supply of books to them in hospital. She agreed with Dr. Eason that it was important for the books to be taken to the patient and not to be available only for those who were well enough to go to the library, and pointed out the value of persuading a patient to start reading—if only a paragraph a day—in bringing him or her back to social life. The proper use of books as a branch of therapy has been neglected too long; the hospitals are now alive to the need, but, as Dr. Eason confessed, it is largely a question of money.

[1] Five were reported by Dr. Munro, in THE LANCET, 1928, i., 384.

[2] THE LANCET, Oct. 4th, p. 777.

SOCIETY OF BRITISH NEUROLOGICAL SURGEONS.

THIS society has met twice in the course of the year. During the month of June, under the presidency of Sir Percy Sargent, a study was made of neurological surgery in Paris. Visits were paid to the clinic of Dr. André Thomas, who showed cases of surgical interest, including a demonstration of the pilo-motor reflexes, to our knowledge of which he has contributed so greatly. At the Salpêtrière cases were shown by Prof. Alajouanin. Mr. de Martel performed several neurological operations, and Dr. Clovis Vincent did a laminectomy for an intramedullary tumour of the cord. At the November meeting just held in London Mr. Bathe Rawling and Mr. C. P. G. Wakeley performed operations at the West End Hospital for Nervous Diseases, Regent's Park, while Dr. Worster-Drought and Dr. Carnegie Dickson demonstrated cases and pathological specimens and the like. Mr. Lambert Rogers made a communication on the nature of the foramen of Magendie. The annual dinner was held at the Langham Hotel in the evening.

HOSPITAL FOR TROPICAL DISEASES.

WITH the opening of new wards and of a clinical lecture theatre at the Hospital for Tropical Diseases in Endsleigh-gardens, another landmark has been reached in the history of that remarkable venture. Mr. William Lunn, Under-Secretary for Dominion Affairs, who formally opened the additions on Thursday of last week, said quite truly that, with one possible exception, no other branch of medicine has grown and developed in so short a space of time. It was only in the last year of the nineteenth century that, under the inspiration of Patrick Manson, the governors of the Albert Dock Hospital consented to the attachment of a school of tropical medicine. Growth was so vigorous that on coming of age the combined school and hospital was well able to occupy the magnificent building in Endsleigh-gardens, designed by Mr. Stanley Hamp, which was in the gift of the Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society. And five years ago, when the school was transferred to Keppel-street to become a part of the London School of Hygiene

and Tropical Medicine, the nominal divorce was no catastrophe to the hospital, which obtained the space it then needed for expansion and improvement, while it retained the coöperation in daily work along with a free exchange of facilities with the other. Before the formal opening Sir Walter Fletcher delivered an address on the work of the hospital and on its value as a centre for clinical teaching and research in tropical medicine. He commented on the threefold work of the hospital. Its patients are drawn from the contacts of our seafaring trade, from the coasts of India, Ceylon, and Burma, from the Gold Coast, and from the Malay States. All classes are helped without regard to colour, to creed, or to social rank. They include officers and men of the mercantile marine, planters, engineers, missionaries, traders, the explorers who develop the Empire, and the servants of the State who administer it in all its various and distant parts. Its second great function was the development of Manson's idea to found a school for affording instruction in tropical medicine to medical officers in the colonial service, and the lecture theatre was to perpetuate Manson's name. The hospital had further inestimable value in the training of nurses to meet the special problems of disease in tropical climates. Finally, it was a centre of research inseparable from the daily work of the healer or teacher, and the only source of progress in the cure and prevention of disease. Manson had himself taught the lesson that the clinician dealing with disease must acquire his own skill in the technical methods of the laboratory. But in spite of the work of Manson and of Ross malaria had not yet been conquered. There were to-day more, not fewer, sufferers from malaria in India, and even in the tercentenary year of the introduction of Jesuits' bark, physicians were, Sir Walter said, still ignorant which constituent of the bark was the most effective against malaria. He wished the hospital well, not only for the sake of sufferers from disease, but for the sake of the better development and greater happiness of every part of the Empire. The new wards, pathological laboratories, and demonstration theatre have been added at a cost of £13,000, raised by the efforts of Sir Leslie Wilson.

ERNST FUCHS.

THE death last Sunday in Vienna of Hofrat Prof. Ernst Fuchs in his eightieth year removes one who had come to be known as "the grand old man" of ophthalmology. Few can have had a wider circle of friends and acquaintances, and many, in countries as far apart as Austria and China, India and America, will feel sad that they will see him no more. His dinner parties at his delightful home in Vienna in pre-war days were usually of the nature of an international gathering. Fuchs was an excellent linguist and an ideal host. A great traveller, there can be few countries of any note he had not visited. He was a very hard worker and a prolific writer. His Textbook of Ophthalmology, one of the best medical text-books ever written, has run through some dozen German editions, half a dozen English ones, and has been translated into many other languages. Fuchs, like many great men, was a very humble one. He would ask anyone working in his clinic who possessed special knowledge to impart it to him. He would discuss sympathetically any difficulty or problem with those far inferior to himself in knowledge and give of his best to them. Few, if any students, left his clinic without a feeling of regret and a real affection for the man himself. Fuchs was formerly a wealthy man but the war left him impoverished. How he faced that difficulty at an advanced age, and overcame it by working abroad, is a testimony both to his personal courage and to the esteem in which he was held outside Austria. In this country his name will be put in the niche of fame alongside those of Bowman, Donders, von Graefe, and Nettleship.

GRÜNFELDER'S TOE REFLEX.

Dr. Hildegard Rothe [1] has published the results of investigations made at the Berlin Children's Hospital into the reflex recently described by Grünfelder. This reflex, which is of interest to otologists and to pædiatrists, consists in dorsal flexion of the great toe combined with a fan-wise spreading of the other toes. As described by Grünfelder,[2] it is elicited by continued pressure on an area of the skull at the intersection of the lambdoid, occipitomastoid, and parietomastoid sutures, which corresponds in the infant with a corner of the posterior lateral fontanelle; and it is found in the presence of disease of the middle ear in children up to the age of five years. It is especially in infants and young children that inflammation of the middle ear is difficult to determine and apt to escape recognition, and here Grünfelder's reflex may be useful if it proves reliable. Dr. Rothe has looked for it in about 150 children with disease of the ear, and in the same number of children with healthy ears. She finds that it is usually spontaneous, but that it is increased, and sometimes elicited when otherwise absent, by pressure on the region mentioned by Grünfelder; it does not always take the form originally described, but sometimes consists in dorsal flexion of the great toe with plantar flexion of the other toes, and sometimes in a fan-wise spreading of the little toes without marked dorsal flexion of the great toe; it is therefore not always equally easy to recognise. The reflex is crossed—that is, it is seen in the left foot in disease of the right ear, and vice versa. Dr. Rothe confirms Dr. Grünfelder's statement that it is found early in otitis media before visible changes in the drum membrane, and she associates it with increase of pressure in the tympanum. She found it present 98 times in 100 cases of acute otitis media before perforation, 12 times in 47 cases of suppurative otitis after perforation, and 3 times in 15 cases of mastoiditis with discharge; but not at all in 4 cases of Eustachian catarrh, and only 3 times in 150 cases of other illnesses without disease of the ear. When the reflex occurred after perforation of the drum there was usually insufficient drainage, with pulsation of discharge, redness, or swelling of the drum. In one case antrotomy was followed by fall of temperature and disappearance of the reflex. Of the three children with other diseases who showed the reflex, one was suffering from encephalitis, one had external otitis, and one had rhinopharyngitis without showing any sign of aural disease on repeated examination. These findings suggest that the reflex is indeed a reliable indication of disease of the tympanum in young children.

Dr. C. S. Myers, who has been director of the National Institute of Industrial Psychology since its inception, has been appointed principal of the institute in order that he may devote the whole of his time to research and educational activities. Mr. G. H. Miles, D.Sc., who has been assistant director for several years, has been appointed director and will take charge of the whole of its practical activities.

[1] Deut. Med. Woch., Oct. 24th, p. 1822.
[2] Zeit. der Kinderheilk., 1929, xlvii., 641.

MODERN TECHNIQUE IN TREATMENT

A Series of Special Articles, contributed by invitation.

CCCXIII.—AFTER-TREATMENT OF SOME COMMON OPERATIONS.

PART II.*

OPERATIONS FOR SUPPURATIVE CONDITIONS.

AFTER operations for suppurative appendicitis, and those on the colon, 25 c.cm. of anti-gas-gangrene (*B. welchii*) serum should be given subcutaneously and may be repeated every three days in 10 c.cm. doses in bad cases. In adults, it is unnecessary to drain the peritoneum in most cases of gangrenous appendicitis, provided that the appendix in perforating has not discharged its contents into the peritoneum; a strip of corrugated rubber is inserted through the abdominal wall, going only down to the outer aspect of the peritoneum. This should not be removed before the fifth day. In children it is wiser to drain the peritoneal cavity in every case where a gangrenous appendix is found.

In suppurative peritonitis a tube is inserted into the pelvis large enough to allow of its lumen being cleaned and dried out each day with a long probe and dry ribbon gauze. This tube is turned daily and is kept in position until the purulent discharge ceases; there seems to be no advantage in removing the tube early, for this causes the abdominal wall muscles to close the track, and a residual abscess may result. When the tube is removed the track should be left open and not plugged with the so-called wick of gauze. I always fix an abdominal tube to the skin with a loop of silkworm gut which can be slipped over the end of the tube to allow it to be turned, after which the loop is replaced. If an abdominal tube should slip out prematurely, a not uncommon accident, no attempt should be made to push it back, for it is nearly always impossible to replace it in its original track; immediately after the tube has come out an adjacent coil of ileum takes its place. If the tube is then reinserted it passes into the pelvis on the wrong side of this coil, kinks it, and causes it to adhere to the old track of the tube. In this way the dangerous complication of acute obstruction of the small intestine is produced. If, then, such a tube comes out and needs replacement, an anæsthetic must be given, the wound must be reopened sufficiently for the introduction of one's finger into the pelvis, and a tube is replaced in its original relationship to the dangerous coil of intestine.

Acute mechanical obstruction of the small intestine is, perhaps, the most serious complication of pelvic peritonitis; it can usually be prevented by delivering, during the operation, the last coil of ileum from the pelvis and carefully peeling from it, and from the under side of its mesentery, every trace of lymph. Acute obstruction of this type occurs, as a rule, after the first week; its onset is sudden, and is indicated by two symptoms—colicky pain and vomiting—and it leads to very rapid exhaustion. The vomiting may not be present if the patient is being starved. Immediate operation is necessary, by reopening and perhaps enlarging the wound; the adherent coil of ileum is then delivered and examined, and it is usually not necessary to do more than remove the adhesions which are causing the kinks. Sometimes, however, so long a piece of intestine is involved in complicated bends and twists that it is better and quicker to do a rapid entero-enterostomy than to attempt to unravel it. In cases that have been allowed to go on to fæcal vomiting and severe distension, an enterostomy should be performed by inserting a small flanged tube into the coil above the obstruction; it is a simple matter to make the opening watertight by infolding sutures, and the coil may be replaced into the abdomen with safety, so that the subsequent fistula may close itself within a week or two.

A less common variety of obstruction is due to the parietal peritoneum not having been sewn up sufficiently closely round a drainage-tube, so that a knuckle of intestine escapes to lie either under the muscles or under the skin, and it becomes strangulated. Early operation, possibly involving resection of the coil, is necessary for this complication.

Drainage-tubes inserted into the pelvis should have very small lateral holes, because it is not uncommon for a fringe of omentum, an appendix epiploica, or the fimbriated end of a Fallopian tube to strangulate through holes of large enough size. Such an occurrence is revealed when the removal of the tube is attempted, and it calls for ligature and division of the adherent structure.

Spontaneous fæcal fistula occurs from time to time after operations for acute appendicitis, usually after the fourth day. The drainage-tube should be withdrawn and the patient placed in the supine position; this allows the track to become angulated and encourages its closure. Such fæcal fistulæ usually close spontaneously within a fortnight if the colon is regularly cleared of its contents, but occasionally an operation has to be performed to close the fistula.

Two varieties of *secondary hæmorrhage* may occur after an operation for appendicitis performed through a para-rectus incision; in one type there is external bleeding, in the other the hæmorrhage is into the colon and is evacuated from the rectum. The former variety usually results from erosion of the deep epigastric vessels or their tributaries, and calls for immediate exploration of the wound and ligature of the vessel above and below the bleeding-point. The internal type of hæmorrhage is due to ulceration of the cæcum at the site of the base of the appendix; the abdomen should be opened, the cæcum freed and delivered, and the ulcerated and bleeding area should be infolded by deep sutures.

Residual abscesses are usually the result of removing drainage-tubes too soon; they are particularly liable to occur in children, and are most commonly placed in the recto-vesical pouch. It is true that such an abscess can sometimes be left to develop until the appearance of mucus in the rectum shows that the abscess is adherent to the rectal wall, through which it is then opened, but I believe that it is better not to wait for this stage but to drain the abscess from above as soon as it is diagnosed; its signs will be the recurrence of fever and the palpation of a mass on rectal examination.

A fairly common position for residual abscess, again in children, is above and in front of the bladder; here it is easily palpable, but the swelling is apt to be overlooked, owing to its close proximity to the pubes. Abscesses in this position are adherent to the abdominal wall, and should be drained through a fresh incision without reopening the general peritoneal cavity.

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* Part I. appeared last week.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL.

PRESIDENT'S ADDRESS.

AT the opening of the 132nd session of the Council on Nov. 25th, Sir Donald MacAlister, the President, alluded to the death of Sir Francis Champneys, a former member of the Council, who held a unique place in the important branch of practice to which he had devoted himself, and whose counsel was sought and valued since his retirement; to the appointment by the University of St. Andrews of Prof. David Waterston as its representative; and to the knighthood conferred on Sir Norman Bennett, a former Crown member of the Council.

INDIAN MEDICAL DEGREES.

"The India Office," said Sir Donald, "has communicated to us the report of a conference of provincial and university representatives, held at Simla during the summer, for the purpose of considering the creation of an All-India Medical Council. After a full and frank discussion of the position, it was agreed that the creation of such an All-India organisation, for the purpose of maintaining a uniform standard of qualifications for the graduates of Indian universities, is essential and acceptable in principle. Resolutions concerning the constitution and functions of the proposed Council were adopted, and commended to the Indian Government as the basis of central legislation; and it was urged that without undue delay the necessary steps be taken to bring the new law into operation. The Council cannot but express its satisfaction that a solution of the vexed question of Indian medical standards, applicable to the whole of British India, should be practically envisaged by the Government of India; and that the responsibility for maintaining these standards, especially in relation to their extra-Indian aspects, should be assumed by a central Indian body having statutory authority. The application of Part II. of the Medical Act, 1886, was made in 1892 by Her Majesty in Council to India as a whole, without reference to its Provinces. The Council has accordingly, throughout its discussions on the subject of Indian medical qualifications, continued to look to the Central Government for the information and the guarantees without which its functions under the Act cannot be properly performed. It therefore counts with confidence on the speedy establishment of a Central Board or Council for India, comparable with the Medical Boards or Councils of other parts of the Empire with which this Council is in regular official communication, and to which it can refer for authoritative information on all questions of local professional qualifications and standards.

"Communications have been received from India suggesting, that pending the establishment of the All-India Council, special and exceptional measures should be taken by us for the recognition of medical degrees granted by the Universities of Bombay and Rangoon. The Executive Committee have given careful consideration to these applications, but have come to the conclusion that it would not be expedient or indeed just to accede to them until the question can be dealt with as a whole, under conditions which would justify the Council's guarantee of their sufficiency."

AUSTRALIA AND CANADA.

"As regards the Commonwealth of Australia and the Dominion of Canada, the position at the present time happens, for historic reasons, to present a different aspect. The several States of Australia, and the several Provinces of Canada, may by Order in Council enter into relations of reciprocity with this country separately. But no such Order in Council has been made applying the Medical Act, 1886, to the Commonwealth as a whole, or to the Dominion as a whole. If at any time Australia or Canada should choose to establish a Central Board and a single standard of qualification, reciprocally recognised by the several States or Provinces, and valid over the whole territory, it would remove certain disabilities and difficulties encountered now by their own medical graduates, and simplify the procedure of recognition and registration in this country. It would then rest with His Majesty in Council, if so advised, to apply Part II. of the Medical Act, 1886, to the Commonwealth or to the Dominion, as it is now applied to British India. As the method and the results of establishing reciprocity between the parts of the Empire are somewhat complex, and owing to circumstances diverse in different cases, I have, at the request of the Privy Council, had a memorandum drawn up by the Registrar, setting forth the particulars of the existing law. This has been received by the Executive Committee and approved for circulation."

FRANCE.

Further correspondence had taken place with the French Government on the question of permits to British practitioners to practise in hospitals established in France for British patients. "The French law," said the President, "appears to be definite, that such British practitioners must possess French qualifications; but negotiations are still going on, and the question is not yet closed. As I pointed out in May, the British law expressly permits French practitioners, not registered in this country, to act as medical officers in hospitals established here for 'the relief of foreigners in sickness.' What is desired is that, if practicable, some corresponding concession should be authorised in France."

Committee Work.

The interim report from the Departmental Committee on Maternal Mortality and Morbidity had been referred to the joint committee of the Education and Examination Committees which already had under consideration the report of the Medical Officers of Health Committee on education and examination in preventive medicine. Inspectors and Visitors of Final and Qualifying Examinations had been active during the recess in attending on the several licensing bodies, and an interim report on certain features of the examinations might be presented. The Public Health Committee was to report on certain proposed changes in the rules now in force for diplomas in public health. The Pharmacopœia Committee would present a report setting forth the progress made in drafting the text of the next British Pharmacopœia. It now appeared impracticable to complete the text by the end of the year as had been hoped. Meanwhile the Committee had authorised the issue of a first report of the Pharmacy Subcommittee, giving a list of proposed changes in the method of preparation of

certain pharmacopœial articles. Effective coöperation with the revision committee of the United States Pharmacopœia Convention had been assured. The problem of attestation and evaluation of certificates of attainments, &c., presented by students from overseas, applying for admission to medical schools and universities in this country, had been the subject of inquiry and discussion by the Special Committee appointed for this purpose. Valuable progress had been made, and negotiations opened up with authoritative bodies abroad, more particularly in the United States. These promised to put the question on a satisfactory footing, and to meet the convenience of medical schools and examining bodies in both countries.

At the conclusion of his address a vote of thanks to the President was proposed by Sir Leslie Mackenzie and seconded by Sir Norman Walker. The Council then passed to the consideration of disciplinary cases.

PAINTING AND THE HEALING ART.

LLOYD ROBERTS LECTURE.

Prof. William Rothenstein, Principal of the Royal College of Art, South Kensington, delivered the eighth Lloyd Roberts Lecture before the Medical Society of London on Nov. 19th, the President of the Society, Dr. R. A. Young, being in the chair.

Prof. Rothenstein, who took for his subject Painting and the Healing Art, said that nothing seemed to him more absurd than the distinction which was made between material science and idealistic art, which were both devoted to the pursuit of truth for its own sake. Neither art nor medicine could be called exact studies, but science, art, religion, and, indeed, philosophy, which all dealt with the real things of life, invited the most frequent charlatanism. There seemed little doubt, however, that in mediæval times artists were the precise thinkers, and he found it constantly difficult to believe, when he realised the extreme intellectual power of the mediæval artists, that they had in them even the elements of charlatanism. It was the more difficult from the point of view of art, when looking at the mediæval period, to believe that scientific men, particularly doctors, could have been associated with the tenets of astrology to the extent that the historian would have us believe. The historian of to-day might blunder similarly. Anyone looking at the mass of literature exposed on the railway bookstalls would find it difficult to believe that we had real writers and real thinkers.

THE ARTIST AS HUMANIST.

In the same way, he continued, in mediæval times the more serious side of life, as represented by the sciences—for example, medicine—was only familiar to the few, while the manifestations of quackery were obvious to the many. The humanistic side of life had always had its appeal among creative people, and this was as strong in the past as it is to-day, and came out in works of art produced under high patronage. Church and State used the artist's powers for purposes of advertising. Kings commissioned him to show the terrible things that would happen if anybody went against them, as the Assyrian and other sculptures in the British Museum show. In the same way the Church used the artist to show what would happen to disobedient people, the awful tortures that would be inflicted on those who did not obey the Church, and the blissful future of those who did. It seems very unlikely that physicians, physicists, and men of science of every kind were really devoted to alchemy and astrology to the extent illustrations in mediæval books lead us to believe; and popular histories may be misleading.

After reference to the knowledge of medicine and surgery possessed, from the earliest days, by Eastern peoples, the lecturer went on to show that mediæval pictures, painted by artists at the behests of the Church, showed profound sympathy for human suffering by depicting the actions of the saints in performing so many of their miracles. The number of pictures of saints performing miracles to remove or relieve sickness was, he believed, larger than the number of pictures devoted to other subjects. The artists believed in the truth of the underlying motif of these pictures, and pursued it for use in the service of any master. A student of early painting showed that there were more paintings illustrating the lives of the saints, subjects which allowed of an enlightened humanism, than motives from the Old or the New Testament. In the days of the Middle Ages, when terrible wars were devastating Europe, artists used all the latitude allowed them by the Church to inculcate pity for the suffering in the depicting of miracles, and the portrayal of these scenes included dignified and noble figures who often represented the scientific men of the period. Prof. Rothenstein could not believe that the dignity of these personages could be associated with humbug and charlatanism. The best way to understand the past was to understand the present. There were in mediæval times movements going through the world that those engaged in art and those engaged in healing were alike subject to. A desire to alleviate the general misery and a feeling for the beauty that was in the world—when the world was a much more cruel place than now—was shared alike by men of science, artists, and writers, while the emotional truth of a subject might be greater at times than the precise truth.

ART, SCIENCE, AND TRUTH.

During the Renaissance when medical science was beginning to assert itself, when the scientific spirit was ready to express itself freely, artists became interested in the more scientific aspects of art—namely, in perspective and anatomy. He doubted if the new Greek learning, coming suddenly into Italy, threw so great a light upon the directions of human endeavour as historians thought. The Greek learning allowed men who had suspected certain scientific truths to express them without being burned alive, and art enjoyed similar freedom. With reference to the study of anatomy, anatomical knowledge was not so necessary as many surgeons believe, because appearance may express what lies behind appearance. Ruskin preached the value of geological knowledge, but the artist worked with the eye, and a fine eye would see and express much that it did not understand from the scientific angle. Both the artist and the scientific man had intuitions. Both Newton and Einstein might conceive their intuitions of truth in a flash; they must spend months or years in proving their intuitions to be true: the artist had this advantage, he could express his at once. The medical man of any period, with a fine knowledge of the human heart, and through the practice of profound observation of what happens in life, was probably as good a medical man as many physicians of to-day, though without their equipment. It is profound knowledge of what happens every day

in this life which enables a man best to deal with its manifestations, and it was possible that a medical man of to-day with high scientific attainments might be following principles and formulas to no purpose, whereas another man with finer intuition, though less book knowledge, might in the end be of more service to mankind. The artist and the healer were actually at one; they were not pursuing different purposes; their common search was for truth, and both depended on intuitive faculties.

SOME APT ILLUSTRATIONS.

Prof. Rothenstein emphasised the points of his lecture by showing on the screen lantern slides of a number of paintings, and of the famous piece of sculpture, the "Dying Gladiator," all illustrating the devotion of the artist to the humanistic side of life. He pointed out that to make the enemy as noble as the friend was a sentiment which goes right through Italian painting, the dignity of humanity having first place.

The following are the subjects thrown on the screen with the names of the artists, and Prof. Rothenstein made running remarks while they were being shown. Fra Angelico and Domenichino, "The Distribution of Alms," the picture by Fra Angelico being the famous one of St. Nicholas. Carpaccio, "The Birth of the Virgin," when the lecturer pointed out that the feelings of order and tranquillity, of harmony and repose, showed a fine sense of contemporary medical care. In a drawing and a painting by Signorelli, he called attention to the extraordinarily living and vivid expression of the nude, and to the display of scientific understanding in the foreshortening. To the picture by Bellini "Circumcision by Rabbis," in the National Gallery, he drew attention as a fine, and even noble, representation of the operation, while of the picture by Lorenzo Lotto, "Portrait of a Doctor," it was difficult, he said, to believe that a man of such grave and splendid appearance could have been anything but a truthful scholar. Another picture by Domenichino, "A Saint Performing a Miracle," led to the comment that the artists in scenes of this kind probably painted their scientific friends; while of a picture by Ghirlandajo, depicting a man suffering from rhinophyma, he said it was difficult to imagine a modern person with courage to sit for such a picture. In a picture by Breughel, "the Blind leading the Blind," he said that the accuracy of representation was beyond praise; while he commended the realism and serious character of three pictures by Rembrandt, "Christ at a Sick Bedside," the "Lecture on Anatomy," and the fragment of a "Lesson of Anatomy." Of two famous pictures by Rubens, "The Descent from the Cross," and a portrait of his wife, the lecturer spoke with admiration. He pointed out that in the first the artist had been able to show wonderfully by depicting the loss of vitality the difference between the dead figure and the living figures. Of the portrait he said that the large eyes and prominent neck had been criticised as symptoms of the well-known association of goitre and a disease of the eyes, but he did not find such criticism sound. He held that the full neck and large eyes were used to exaggerate the subject's beauty; art and science parted company here, and to criticise a slight exaggeration of human loveliness is using the scalpel too early. Of one of the many pictures by Velasquez representing dwarfs, he said that the method of presentation was humanistic, no spirit of ridicule entering in.

Prof. Rothenstein's address was followed closely by a large and appreciative audience.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ANNUAL MEETING OF FELLOWS AND MEMBERS.

THE annual meeting of Fellows and Members was held in the theatre of the College on Nov. 20th, Lord Moynihan, the President, being in the chair. Five members of the Council, two other Fellows, and fifty Members attended the meeting.

THE ANNUAL REPORT.

The President referred to the decision to hold a Primary Fellowship examination in Australia next year; the first awards of the Diploma in Gynæcology and Obstetrics, the Macloghlin scholarships, and the Mackenzie Mackinnon research fellowships; the award of the honorary gold medal of the College to Prof. G. Elliot Smith and Mr. R. Lawford Knaggs; and generous grants which had been made by Lord Melchett, Sir Louis Baron, and Lord Beaverbrook for the endowment of research scholarships in the College.

Dr. Richard Gillbard asked what were the receipts during the past year from the granting of Fellowship and Membership diplomas, what were the figures for the attendance of members of the Council at meetings, and whether it was possible for men to become Fellows without having previously passed the Membership examinations. Dr. David Roxburgh asked the reasons for holding a Primary Fellowship examination in Canada, suggesting that such examinations would lower the standard of the Fellowship.

The President replied that the net receipts from the granting of diplomas in the past year had been £5692 on Membership diplomas and £2326 on Fellowship diplomas; he commented on the diligent attendance of members of the Council as shown by the figures given in the report. The question of examinations in Canada had been dealt with fully at the annual meeting last year; it was one to which the Council had given the most careful attention, and there was a consensus of opinion that these examinations were to the advantage both of the College and of surgery.

DIRECT REPRESENTATION OF MEMBERS.

Mr. Ernest E. Ware then moved:

That this forty-second annual meeting of Fellows and Members of the Royal College of Surgeons again affirms the desirability of admitting Members, who constitute nine-tenths of the College roll, to direct representation on the Council of the College. That the result of the recent poll of Members resident in the United Kingdom and the Irish Free State (taken by the Society of Members in response to reply of the Council, Dec. 12th, 1929), which is as follows:

Cards sent out	12,766	Against representation	156
Cards returned	166	Majority in favour ..	6676
Cards not valid	58	By personal canvas in favour	106
In favour of representation	6832		

provides indisputable evidence that this change in the constitution of the College is desired by a very considerable number of the Members of the College.

Mr. Ware emphasised the justice of his appeal, which accounted for the persistence with which similar resolutions had been moved for over 40 years, and commented on the absence of rancour at recent annual meetings. Direct representation of Members would strengthen the position of the Council of the College. The statements made by the President at the last annual meeting and by the Council in their reply to the resolution then passed had been taken

as evidence that the Council viewed this question with an open mind; thus encouraged, the Society of Members had taken a poll of the majority of Members of the College; lack of funds had rendered a poll of the complete body of Members impossible. He remarked on the convincing majority shown by the figures embodied in the motion, and stated that it was desired that a certain number of Members should be elected by Members to sit on the Council of the College.

Dr. Windham L. Gillbard, seconding the motion, referred to the fact that 55 per cent. of the Members to whom cards had been sent had replied, and that, of those who had replied, 96 per cent. were in favour of the direct representation of Members. Dr. Arthur Haydon, speaking in favour of the resolution, advocated a geographical representation of Members on the Council. The College, he said, ought to be in a position to defend its Members against competition from unqualified practitioners. Dr. F. W. Collingwood said that men who were doing such important work as the Members ought to have a better status in the College. Dr. T. Wilson Parry, admitting that from a legal point of view Members had no case, appealed to the ethical justice of the College. Other speakers in support of the resolution were Dr. Howard Stratford, Dr. Richard Gillbard, and Dr. Edwin D. Kite.

The President said the question of direct representation of Members had always been regarded by the Council as a matter of the gravest importance, and had always been debated without ill-feeling. The Council this year had decided to meet in committee to consider the resolution passed at this meeting, the proceedings of which would be duly reported to them.

The question was then put and carried by 43 votes to 1.

ROYAL SOCIETY OF MEDICINE.

ANNUAL DINNER.

THE annual dinner of this Society took place on Thursday, Nov. 20th, at the May Fair Hotel, the chair being occupied by Dr. T. Watts Eden, President of the Society. H.R.H. the Duke of York was the guest of honour and the Bishop of Birmingham (Right Rev. W. E. Barnes) was also a specially invited guest. There was a large and distinguished attendance. The toast of "The King" having been duly pledged, the Duke of York proposed "The Royal Society of Medicine."

His Royal Highness referred to the great history of the Society, with that of its precursor, the Royal Medico-Chirurgical. In the rush of everyday work it was good for Fellows to meet annually in this way to renew their good fellowship, and in a tavern, where many great movements had originated. He diagnosed, especially in view of its undoubted appetite, that the health of the Society was good, so that it might be good advice to take "cures" at a tavern instead of going to Bath and Harrogate. He especially admired the aim of the Council to stimulate and encourage its Fellows in their labours, however scattered they might be in the outposts of Empire. There was every reason to be proud of the wonderful library, and of the new method of sending to remote places photographs of important scientific documents and treatises. The "Proceedings" must also be a most valuable publication, especially to those unable to attend the meetings. Realising that this great Society had been built up by the enthusiasm and devotion of members of the profession, the better to equip themselves for their warfare against pain and disease, he felt honoured that he had been asked to propose the toast.

The President, in responding, said that a new conception was growing up in the public mind concerning the primary function of the doctor—namely, that it was to keep the citizen in good health, that of attending to his ailments being secondary. Such a conception had been powerfully stimulated by the series of informative reports which had been issued by the Ministry of Health in recent years. Some time must be allowed, however, to give opportunity to the profession to adjust itself to this new conception. One of the most important tasks of the sections of the Society was to examine new methods and scrutinise the data on which such methods rested, so as to assess their value for practical application. The acknowledged differences of medical opinion met with was a constant topic of comment by the public, some of whom regarded it as a weak spot in the profession, but the speaker thought it fairer to regard it as an evolutionary phenomenon, leading, all hoped, to eventual progress. And the medical was not the only profession in which lack of uniformity of opinion was marked; witness the theological. Dr. Watts Eden referred briefly to the increasing complexity of the terminology in which the discussions at the different sections were now carried on. The need for a clearing-house of medical opinion was greater now than ever before; research was in the air, and the demand for it was great, but the profession never forgot that it exists to render practical service to the community. The Society had means, collectively, of examining the whole of the field, much of which was always new, and of arranging the patchwork results of research into useful patterns.

The toast of "The Guests" was proposed by Dr. F. M. R. Walshe, who, after expressing the special gratification of the Society in the presence of His Royal Highness, said that he would depart from custom in the toast that had been confided to him, knowing how deep-seated in the Anglo-Saxon temperament is the abhorrence of public eulogy, so that when the public orator at an ancient University introduces the recipients of honorary degrees, he does so in a Latin speech, public praise being tolerable to its subject only when spoken in a tongue that no one present can understand.

"I am resolved," he continued, "that our guests shall not suffer embarrassment at my hands, and I feel that I shall best consult their pleasure by explaining their hosts to them. This is not the bizarre suggestion it may appear. For if that grotesque figment, the doctor of the novelist, the playwright and the journalist truly embodies the public conception of us, we are sadly misunderstood. A number of unexpected components go to make up the doctor of modern fiction. First and foremost he must be a surgeon; a surgeon of incomparable skill and strong sex appeal. He lets blood copiously with long sensitive fingers and the calm of the strong silent man. When he is not being followed round the wards of his hospital by flocks of adoring students, he runs a busy general practice. He has neither wife nor encumbrances. He charges his patients no fees. Finally, he is invariably a source of ignoble jealousy in his colleagues. I have never seen it explicitly stated, but I am convinced that he wears a fur-lined overcoat and travels first class on the railway. In this, indeed, he comes nearest to the true surgical tradition. Even the less wholly extravagant medical

creations of that gay exploiter of the half truth, Mr. Bernard Shaw, are but changelings and bear no more resemblance to the doctor than does a presentation portrait by a modern artist really depict the features of its defenceless subject. It would not be candid of me to maintain, however, that we are not ourselves somewhat to blame for the popular errors concerning us. The medical profession rarely speaks with an authentic corporate voice, though it is possible that a guileless public may so regard the sententious twaddlings of that modern Mrs. Harris, 'the Harley-street specialist' of the press. But there are other reasons which make it inevitable that we should be misunderstood. For instance, some of the most familiar words in the language have a special meaning for us; a meaning that has no currency elsewhere. Take that simple word 'evidence.' To us, this implies the concise statement of some fact of careful observation. To the lawyer, on the other hand, it means a statement, any old statement, uttered by any light-hearted gossip to whom the courts in their inscrutable wisdom may decide to listen. Finally, to the politician—but there are lengths to which candour may not be pushed, and before this audience I dare not utter the hearty monosyllables that alone are adequate to a definition. I will not go on elucidating the little differences that render us doctors such a puzzle to our fellow-men. In legislation and in jurisprudence to be incomprehensible is to command respect, and in modern art and poetry to be unintelligible is the hall-mark of true genius. Therefore, I hesitate to withdraw from our profession what of mystery still surrounds it, and content myself with giving you the toast of 'Our Guests.'"

Dr. Barnes, in responding, said that the ancient Egyptians had at their evening feasts, on such an occasion as the present, a memento in the shape of a mummy, and perhaps this Society regarded its guests as either examples of past success or as objects of potential experiment. Perhaps, as a guest, he was expected to tell members of the profession how they were judged from the outside. First, he wished to express the indebtedness of the whole community to the medical profession; especially because of the advances made in medicine and surgery during the last century. He had recently been reading the diary of a Somersetshire parson of a century ago, and was struck by the comparative softening of manners in the present day and the decrease of coarse viciousness; but he was most impressed by the alleviation of pain and suffering due to the progress of medical science and the establishment of our public hospitals. Surgery especially had been transformed by anæsthetics and aseptic practice, and progress in technique merited the term magnificent. The exactness and skill of British surgeons was inferior to none in the world. But though he and his relatives owed much to surgery, it must be regarded as a rough and rather crude way of dealing with the diseases of the human body. Was it a vain dream to look for the time when disease would be overcome either in Nature's way by increasing the resistance of the body to hostile organisms, or by remedying defects in internal chemistry? We were, as yet, only at the beginnings of knowledge concerning vaccines and vitamins. Laymen need not be troubled because doctors disagreed; in fact when they agreed too closely there seemed ground for suspicion. Medicine could not yet be called an exact science, and an exhilarating feature of scientific research was that one never knew in what region the next discovery would be made. At the end of the nineteenth century it seemed to many that the great era of physics had closed, yet the fact was that an even greater era than that of Faraday, Maxwell, and Kelvin was only just beginning; the period of those great minds was but the twilight before the dawn in the matter of present discovery and promise. At any time there might come in medicine a group of discoveries in biochemistry which would make it possible to confer on the body an immunity from ill-health such as now was enjoyed only by exceptional individuals. In spite of various kinds of disorder, the bishop declared, it was good to be alive. Never since the Golden Age of Greece had mental energy been more fertile than now. Naturally, old beliefs had crumbled and traditional standards of conduct had been sharply challenged, but, he declared, the gain outweighed the loss. Those who believed, as he himself did, that the Moral Law was part of the fundamental structure of the Universe would not fear its failure to withstand frank criticism; if religious dogmas proved to be untrue, let them pass. Dealing with the subject of eugenics, Dr. Barnes said that medical skill and public hygiene would ultimately be disastrous if they preserved inheritable mental and physical defects in humanity; it was known that dysgenic mutations could occur, in plants as well as in animals. Medical science destroyed the power of hostile environment, but usually it left inheritable characters untouched. The existence of mentally and therefore socially dysgenic mutations was a grave menace to the welfare of the community; already mental deficients constituted 1 per cent. of the community, and more accurate genetic knowledge was needed. A beneficent millionaire might well provide laboratories and a chair in genetics at our great universities. Investigations had shown that life had existed on the earth for quite 1000 million years, and it seemed that the intensity of the sun's heat had changed but little in that vast time; so that we could look forward to 500 million more years during which humanity could flourish on the earth. But civilisation, as measured by the art of writing, was not yet 10,000 years old; what, then, would happen in the inexhaustible future? Would medical science actually conquer disease, and would the descendants, enjoying this powerful brain and perfect body, create an Utopia? He could ask these questions without anxiety, and hear the answers without dismay, for he felt certain not only that man's permanent habitation was not on the earth, but also that his spiritual achievements were imperishable. In the average man as known to-day there was much that was worth preserving. In regard to aspirations and achievements, moral loyalties, love and service, his own faith was that they would not vanish as though they had never been; they were eternal, they were beyond time and space, for they were in that realm which the Christian had learned to call the Kingdom of God.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

BERLIN MEDICAL SOCIETY.

THE Berlin Medical Society celebrated its seventieth anniversary at a meeting attended by representatives of the Government Health Department, the City of Berlin, the Medical Faculty of the University, and of other medical societies. The president, Prof. Goldscheider, gave an account of the development of medical science during the past 70 years. The honorary secretary, Prof. Adam, described the history of the society which issued from a fusion of two smaller societies. The

number of members was at first 180 but is now about 1600, although many other special societies have meanwhile been created, of which the Society for Internal Medicine, founded by a number of physicians leaving the Berlin Medical Society in 1881, is the biggest. The society originally held its meetings in various places, but in 1892 rooms were hired in the Langenbeck House belonging to the German Surgical Association. Eventually the two societies together erected new premises called the Langenbeck-Virchow House which was inaugurated in 1915 during the war. The first president of the society was the celebrated ophthalmologist Græfe, who was succeeded by Langenbeck, Virchow, Senator, Orth, and Kraus. Prof. Goldscheider entered on office last year.

A CARDIAC HORMONE.

Prof. Zuelzer recently reported to the Berlin Medical Society on his clinical experiences of eutonone, a cardiac hormone discovered by him in the liver. Eutonone, he says, increases the muscular action of the heart—that is to say, the tone is increased. It has no cumulative action like digitalis, so that in severe cases six or eight injections may be given without undesirable symptoms. In healthy hearts which are still able to answer ordinary demands, though already unfit for great strain—for instance, in everyone over fifty—the reserve power is improved. Eutonone is also efficacious, it is claimed, in acute infectious diseases. Prof. Zuelzer said that during the last epidemic of influenza he treated in his hospital a series of pneumonia cases with no other cardiac remedy and found that in these cases the heart was undamaged, whereas in patients treated with other compounds cardiac murmurs often developed. Its administration is further appropriate before severe operations and for training; after being treated with eutonone fast runners showed greater efficiency, less fatigue, and no cardiac palpitations. By its dilating action on the coronary arteries eutonone is useful in angina pectoris; most of the cases of moderate severity lost their pains within two or three weeks. In chronic myocarditis the destruction of the heart muscle cannot, of course, be repaired, but the reserve power of intact parts of the heart muscle is strengthened so that the patients loose their troubles. Dyspnœa disappears and patients who came to the hospital with severe orthopnœa were able to sleep on the same or the next night without morphia.

PSITTACOSIS.

The epidemic of psittacosis which broke out some time ago in Germany led to severe measures which reflected great nervousness in official and medical circles as well as among the lay public. As a result of this nervousness a consignment of 180 valuable parrots was destroyed by gas under the order of the Hamburg health authority without any previous examination, although none of them showed any symptom of disease. The proprietor of the parrots has now brought an action for damages against the city, alleging that there was no reason to destroy the parrots at once; even if they were suspected, quarantine would have been sufficient. He says that the manager of the celebrated Hagenbeck Zoological Garden in Hamburg intended to buy the parrots after their arrival which shows that there was no suspicion that they were ill.

STATISTICS OF RHEUMATISM.

Statistical records show that of the invalids in the Berlin municipal hospitals for the incurable 7 per cent. suffer from chronic rheumatism. As to acute cases it is stated that in the Charlottenburg municipal hospital, for instance, 4·3 per cent. of all the patients received during the last three years suffered from rheumatic diseases. The number of 7 per cent. invalids is much smaller than in other countries—e.g., 9 per cent. in Sweden, 12 per cent. in Denmark, and even 18 per cent. in England are recorded. Invalidity began in 66 per cent. before 60, in 38·5 per cent. before 50, and in 15·5 per cent. before 40 years of age. The average duration of the illness is in Berlin 15 years and of invalidity 10 years. In the city of Berlin the expense of the individual arthritic invalid amounts to 14,500M, and for all the rheumatic invalids together to 3,295,000M. A familial history of the disease was obtainable in 35 per cent.; exogenic causes were chills, infection, and trauma. Among women working with laundry or in draughty places like market halls increases liability to rheumatism. Among men, the rheumatic occupations are those of stoker, baker, mason, and coachman.

A NEW SANATORIUM FOR LUPUS PATIENTS.

There are very few sanatoriums for lupus in Germany compared with the great number of sanatoriums for tuberculosis of the lungs and of the bones and joints. There is, indeed, only one sanatorium of the kind at Giessen under the direction of Prof. Jesionek, the dermatologist of Giessen University; the second sanatorium for lupus at Graudenz, Western Prussia, became Polish after the war. The German committee for the combat of tuberculosis has now erected a new sanatorium in Müncheberg near Berlin. At the opening the president of the German Health Office, Prof. Hamel, said that lupus is much more widespread in Germany than is generally believed; in Westphalia alone 2000 lupus patients, and in all Germany about 50,000 are registered. The new sanatorium has arrangements for modern treatment, especially for the different irradiation methods and for the Gerson diet. The number of beds is 30 for adults and 15 for children.

RADIOGRAPHY IN OBSTETRICS.

Dr. Baumann reports on the value of radiography to the obstetrician, especially when manual examination fails. By radiography the position of the fœtus, the disproportion of the head and the pelvis, the success of turning, twin pregnancy, deformities of the fœtus, such as hydrocephalus and anencephalus, can be made visible. In narrow pelvis not only the size of the fœtus is ascertained but also the size and the form of the head and its presentation.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

STATISTICS OF B C G.

In a communication made to the Académie de Médecine on Nov. 4th, Prof. Calmette brought the statistics of B C G up to date with certain figures of exceptional interest. At the present time every seventh infant born in France is vaccinated with B C G—i.e., 8000 to 9000 infants every month. The total number of persons thus vaccinated in France up to Oct. 1st, 1930, is 280,000, and this figure does not include 112,000 infants vaccinated in the French colonies and protectorates. About an equal number have been thus vaccinated outside French territory, and every European country, with the exception of Austria, Great Britain, and Portugal, has introduced B C G vaccination. The countries in which it has been most extensively adopted and yielded instructive results are Greece, Poland, Roumania, Spain, and Sweden. In Roumania more than 60,000 infants

have been vaccinated. In Sweden, in the province of Bothnia, where there is much tuberculosis, 4009 infants were vaccinated between September, 1927, and May 1st, 1930. In the same place and period, it is stated, there were 8342 infants who lived under the same conditions and who, not being vaccinated, served as controls. During these three years, the mortality for the non-vaccinated was 22·2 per cent., whereas that for the vaccinated was only 6·6 per cent. Prof. Calmette presented a table of statistics gleaned from Germany, Belgium, Bulgaria, Spain, Greece, Hungary, Poland, Roumania, Russia, Sweden, Czecho-Slovakia, Yugoslavia, the Argentine, Brasil, Canada, U.S.A., Mauritius, and Uruguay. As he pointed out, a comparison of the tuberculosis death-rates among vaccinated and non-vaccinated infants is apt to be misleading, because it is exceptional for the cause of death to be determined by a doctor, whereas if a comparison is made of the general death-rates in the two groups, every death from tuberculosis is counted in one or other of the two groups. Another interesting comparison was that made between two different age-groups—the first month of life and the last eleven months of the first year of life. B C G vaccination not having had time to be effective during the first month of life, no difference could yet be expected in the death-rates in the vaccinated and non-vaccinated groups. But there should be a difference in the second age-period in favour of the vaccinated if B C G possesses the merits claimed for it. The correctness of this hypothesis, said Prof. Calmette, has already been proved in Bulgaria, where the death-rates in the first month of life have been approximately the same for the vaccinated and non-vaccinated, whereas in the second age-period, from one to twelve months, the death-rate was 11·4 per cent. for the non-vaccinated and 5·6 per cent. for the vaccinated. In France, in the Department of Guebwiller (Upper Rhine) there were 478 births in 1925; none of the infants born in this year was vaccinated. Everyone of the 445 infants born in 1928 was vaccinated with B C G. The death-rate during the first month of life among the infants born in 1925 was 2·7 per cent.; for the infants born in 1928 it was 2·76 per cent. But in the age-period from one month to a year, the 1925 death-rate was 5·1 per cent., the 1928 death-rate only 1·37 per cent. Though it might be argued that the mothers who got their infants vaccinated would also in other respects care better for them than the mothers who did not get their infants vaccinated, this possible source of error can be eliminated in the case of the dispensary infants. These (constituting the majority) were under the supervision of visiting nurses who would devote equal care to the vaccinated and the non-vaccinated.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

THE NEW RECTOR OF ABERDEEN UNIVERSITY.

THE medical profession may well be gratified that the students of Aberdeen University have chosen as their Rector Sir Arthur Keith, whose name is one of the most brilliant on the list of medical graduates of the University. It has not, I believe, happened before that two graduates of Aberdeen occupied the distinguished posts of Chancellor (Lord Meston) and Rector (Sir Arthur Keith). They both won their spurs away from Aberdeen; but the University has not lost sight of them.

AN EDUCATIONAL EXPERIMENT AT DUNDEE.

Dundee Education Committee have decided to try an experiment for a year with the unemployed youth of the city. It was found that out of 82 boys wholly unemployed, only 4 were attending evening classes and of 111 girls, only 6. It is now proposed to spend approximately £1000, of which 75 per cent. would be paid by the Ministry of Labour, on providing a course for girls. The subjects for the girls suggested by the director of education include cookery, needlework, English with history and geography, based on the posters of the Empire Marketing Board, writing of letters, calculation of bills, physical exercises with team games, singing, and also lectures on personal hygiene and mothercraft. A corresponding sum is to be spent on the lads' course. Their course would include benchwork, measuring and weighing, and occasional lectures on physiology and personal hygiene in place of the domestic subjects in the girls' course. These institutes will enable the Health Committee to keep touch with an important section of the young community.

HYGIENE UNDER OTHER NAMES.

The medical mind is so occupied in blazing new trails in preventive medicine that some already in use are apt to be forgotten. Mr. Gilzean, convener of the general purposes committee of Edinburgh town council, says that in Edinburgh the attendances at the baths last year were 750,000, the total including 75,000 school-children who were admitted at a nominal charge. In the poorer quarters of the city the public wash-houses were used last year by 640,000; the income was £17,000, and the expenditure £22,000. For recreation, there were 58 parks, 35 playgrounds, 79 football pitches, 4 rugby pitches, 6 hockey pitches, 8 cricket pitches, 9 golf-courses, 35 bowling-greens, 80 tennis-courts, 11 putting-greens, 3 quoiting-courses. The gross expenditure on parks was £74,000. The income from various sources amounted to £19,000, leaving a charge on the rates of practically £1000 a week. He thought that this expenditure was justified up to the hilt. Last year in connexion with organised games under the direction of the public parks committee over a million persons took part.

These facts, though not directly medical, indicate how the concept of health preservation has infected the whole community. No doubt other cities can show equivalent figures, but it is worth putting these on record since an active layman has taken the trouble to procure them. No one can trace the effect of these activities in any death-rate; but that only means that the death-rate is a very imperfect measure of the progress of preventive medicine.

CLINICS FOR THE BLIND.

The standard of certification of the blind varies widely in different places, and in order to secure more uniformity the Department of Health recommends that local authorities should arrange for the establishment of clinics on a regional basis, as in the parallel case of hospital services, on the Glasgow model. The Department considers that, in addition to the Glasgow clinic, there should be four regional clinics, at Edinburgh, Dundee, Aberdeen, and Inverness. With a view to securing uniformity, the Department proposes to convene a meeting of ophthalmic specialists as soon as these surgeons have been appointed to the clinics. On April 1st of this year there were 8897 blind persons in Scotland, or one to 549 of the population. In the case of blind persons between 50 and 70 years of age, the corresponding proportion was 1 to 1183. In areas where the incidence

of blindness generally, or the incidence in the 50–70 years age-group, is above the ratio for Scotland as a whole, it may be desirable to re-examine all the registered blind, or at least the doubtful cases. In these matters the services of a properly organised regional clinic would prove indispensable.

SCOTTISH CRIME.

There seems to be a steady decrease in the number of persons proceeded against in the Scottish criminal courts. In 1929 the number dealt with for cruel and unnatural treatment of children fell to 193, compared with 617 in 1914. The number proceeded against for drunkenness and breach of the peace was the lowest since 1918. The general decrease was seen mainly in crimes against property without violence and in miscellaneous offences. Only one person was sentenced to death in the year, and he was reprieved; on the other hand those sentenced to penal servitude numbered 51, the highest number since 1922. The number of persons dealt with under the Probation of Offenders Act, 1907, has again increased, and stands at 3918 in 1929, which is the highest since 1917. This is held as affording some ground for satisfaction.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

GALWAY BOARD OF HEALTH.

THE expected result has followed on the recent inquiry made by the Department of Local Government and Public Health into the working of the County Galway Board of Health. The Minister has, by sealed order, dissolved the Board of Health, and transferred its powers and duties to a commissioner appointed for the purpose. In the letter announcing this decision the Minister states that for some considerable time he had grave doubts of the capacity and efficiency of the Board. He gives several examples of this lack of efficiency. The Board had failed, in spite of repeated representations, to provide suitable hospital accommodation in Clifden and Ballinesloe. Some months ago the Board committed itself to a policy of abrogating its authority as regards disciplinary questions concerning dispensary medical officers. More recently it had opposed the policy of reorganisation of public health services consequent on Acts of the Legislature. In particular it had obstructed the carrying out of the functions of the county medical officer, by refusing to appoint an assistant medical officer and two public health nurses. As a result the county tuberculosis scheme had partially fallen into abeyance in the past few months, with most unsatisfactory consequences to patients who had been under treatment. In view of the attitude of persistent inertia adopted by the Galway Board of Health, the Minister had little option as to his action. Moreover, experience of administration by paid commissioners in all areas in the Irish Free State where it has been tried has proved uniformly successful. The most notable example is the city of Dublin. Under commissioner rule there the social services were widely extended, and many overdue reforms carried out, while at the same time the rates were reduced by about 25 per cent.

DAMAGES AGAINST A COUNTY MEDICAL OFFICER OF HEALTH.

An unusual claim was made against Dr. Maguire, county medical officer of health, before County Court Judge Moonan at Roscommon last week. Two members of a family named Campbell claimed damages amounting to £200 against the county board of health and the medical officer for the destruction of clothes and other property. It was given in evidence that one occupant of the house had died of typhus fever, and another, suffering from the same disease, had been removed to hospital. The medical officer of health proposed to remove certain clothes and other articles for disinfection. A third member of the family, Patrick Campbell, appealed to the medical officer not to remove the clothes for disinfection, as such a proceeding would cause unnecessary publicity, and would injure the family business; he asked that the infected articles should be burned. He went so far as to give the medical officer an indemnity against any claim if he should agree to burn the articles. This course was adopted. The plaintiffs maintained that Patrick Campbell had no authority from them to authorise the destruction of their property. For the defence it was urged that Dr. Maguire was merely carrying out his statutory duties, and that he believed that Patrick Campbell had full power to act for the family. The judge dismissed the case against the Board of Health, but gave decrees for £90 and £75 respectively against Dr. Maguire, expressing the hope that the Board would not allow their medical officer to be at any personal loss.

APPOINTMENTS IN DUBLIN HOSPITALS.

Mr. James Owens has been appointed surgeon to Mercer's Hospital, in succession to the late Mr. R. C. B. Maunsell. Dr. L. Abrahamson and Dr. James O'Connor have been appointed honorary physicians to the House of Industry Hospitals, in succession to Dr. J. F. O'Carroll and Dr. G. E. Nesbitt, resigned.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced: Surg. Comdr. J. F. Ainley to *Victory*, for R.N. Hospital, Haslar; Surg. Lt. Comdrs. R. W. Higgins to *Ganges* and A. A. Pomfret to *President*, for three months' post-graduate course; and Surg. Lt. R. C. May to *Harebell*.

ROYAL ARMY MEDICAL CORPS.

Maj. R. H. Lucas retires, receiving a gratuity.
Maj. P. S. Stewart retires on retd. pay.
Lt. D. A'Brook resigns his commn.
Lt. (on prob.) T. M. Corcoran, from the secd. list, is restd. to the estabt.

ARMY DENTAL CORPS.

Capts. J. McL. Foreman and J. Wren to be Majs.
Lt. A. Brazenor to be Capt.

ARMY RESERVE OF OFFICERS.

Maj. J. B. Meldon, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.
Capt. J. A. G. Burton, from Supp. Res. of Off., to be Capt.

TERRITORIAL ARMY.

Maj. H. G. Wimbush (late M.G.C.) to be Lt., and relinquishes the rank of Maj.
Capt. G. E. Lloyd to be Maj.
Lt. H. B. Stallard resigns his commn.
J. E. Crooks to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Maj. O. Teichman, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

ROYAL AIR FORCE.

The undermentioned Flight Lts. are transferred to the Reserve, Class D (ii): M. Clancy and C. P. O'Toole.

INDIAN MEDICAL SERVICE.

Lt.-Col. H. R. Dutton retires.

PUBLIC HEALTH SERVICES

THE TREATMENT OF VENEREAL DISEASES AMONGST SEAMEN.

By A. O. Ross, M.D., D.P.H.,
MEDICAL OFFICER, SEAMEN'S DISPENSARY, LIVERPOOL.

DURING the past few years the control of venereal disease among seamen has given rise to much discussion, culminating in the resolutions which were adopted by the second conference on the Health and Welfare of Merchant Seamen held at Geneva in October, 1929. These resolutions call upon the League of Nations to evolve a system whereby treatment of venereal disease in seamen shall be regularly carried out, both at sea when a surgeon is carried and at clinics on shore. The main reason for the necessity of treatment at sea is the economic one that a seaman earns his pay by going to sea and rapidly becomes destitute should he remain ashore.

From six years' experience as a whole-time medical officer in charge of a venereal diseases clinic dealing with seamen of all nations, and whose attendances number over 50,000 annually, I propose to give the outline of a plan for treatment, based on actual contact with the problem.

Gonorrhœa.

Acute gonorrhœa up to six weeks can be treated as efficiently at sea as on shore by means of urethro-vesical lavage, provided the lavage solution is kept weak and that the temperature is within the limits of 100° to 110° F. The installation of a common irrigator in ships demands that one person is made responsible for the sterilisation of the nozzle and for the cleanliness of the reservoir and tubing. Oxycyanide of mercury is the irrigating solution of choice in a dilution of 1/12000 to 1/8000 because of its cleanliness. In conjunction with euflavine gr. ½ by mouth 3 times a day it has been used as the routine lavage solution in this clinic for four years, and in the majority of cases the urine is rendered clear within one week. This compares favourably with other lavage solutions which commonly take at least twice as long to achieve that result. The use of the small hand syringe should never be permitted as there is abundant evidence to prove that this instrument is responsible for the bugbear of chronic anterior folliculitis.

The later stages of gonorrhœa are best dealt with by the shore specialist, and the necessary time can usually be spared by the seaman between trips. The danger of issuing irrigators to ships is that the men will imagine that they are cured and will not report at the shore clinic. Some men therefore who would have attended till cure was completed at a shore clinic may by reason of this false sense of security become potential dangers to the uninfected community.

In ships carrying surgeons there is rarely any reason for the man infected with gonorrhœa to stay ashore even in the chronic stage, provided the ship's surgeon makes use of the medical officer of a clinic as a consultant and bacteriologist combined. In this connexion it is well to remember that gonorrhœa and syphilis frequently coexist, the syphilis being latent in about 5 per cent. of cases. The need for the serological examination of the patient's blood early in the disease and again four months later should never be forgotten. Again, it might be well for all supposedly cured gonorrhœa cases to be referred to a shore clinic at the end of each voyage. In this way, two heads being better than one, the number of potential carriers of the gonococcus could be reduced.

Form V44 should be carried in the medical stores and used when referring any patient to a clinic, or transferring a patient to another ship or to hospital for in-patient treatment.

Syphilis.

In ships without surgeons a penile ulcer should be treated with a solution of normal saline (as described in the Ship Captain's Guide) and the advice of a competent medical officer sought as soon as port is entered. Secondary and tertiary syphilis can be treated orally, but here again the danger is that disappearance of symptoms may lead the untutored to imagine that the disease has been cured. The captain might make it his duty to report all cases of venereal disease occurring on the voyage to the inspector of the port sanitary authority on arrival at the home port. The inspector could then interview the men individually and tactfully urge them to attend at the shore clinic.

In ships with surgeons the treatment of syphilis (diagnosis confirmed if possible by micro-examination and serological tests) depends upon the capability of the surgeon. In all cases intramuscular administration of bismuth should be possible, but the provision of any form of arsenobenzol is of doubtful value. If a surgeon is not skilled in intravenous therapy it is unlikely that he is acquainted with the early signs of arsenobenzol intolerance, and thus to issue sulfarsenobenzol might result in serious trouble in patients with idiosyncrasy to arsenobenzene preparations, though at first sight the provision of sulfarsenobenzol for intramuscular use seems to present an easy way out of the difficulty. Where the ship surgeon is trained in the administration of this preparation a supply should be carried and used according to one of the well-defined courses of treatment in use on shore. Each dose of arsenobenzol and bismuth should be entered in the patient's V44 which should be given to him on paying-off, or on change of surgeon.

Our larger shipping companies have it in their power to demand that any surgeon entering the service of the company shall hold a certificate of proficiency from a clinic of standing—i.e., a clinic which has at least 500 fresh cases of venereal disease per annum—vide Ministry of Health Statutory Rules and Orders, 1930, No. 69—and eventually the ships will become staffed with surgeons who are capable of treating any case of syphilis in the ship's company.

There remain for consideration the men who come ashore for treatment for syphilis—i.e., from ships where bismuth alone has been administered or where no surgeon is carried. These men certainly want to spend as little time as possible on shore, and thus intensive treatment is indicated. I have been using the method originally used by Parnell and Fildes in the Royal Naval Hospital at Haslar in 1917–19. In addition to the purely N.A.B. course of 4·2 g. I have added intramuscular bismuth and simultaneously have increased the N.A.B. to 5·7 g., although I believe that 4·2 g. of N.A.B. give results just as good. A scheme is here given.

	Day.		Grammes N.A.B.	Grammes Bi.
	1	..	0·45 + 0·6 g. sodium thiosulphate	0·30
	4	..	0·6 + " " " "	"
	8	..	*0·45 + " " " "	"
	11	..	*0·6 + " " " "	"
	15	..	0·45 + " " " "	"
	18	..	0·6 + " " " "	"
	22	..	0·45 + " " " "	"
	25	..	0·6 + " " " "	"
Short course	29	..	Nil.	
	32	..	0·75 + " " " "	"
	36	..	Nil.	
	39	..	0·75 + " " " "	"

* After the third and fourth doses, symptoms of intolerance are to be especially looked for, and before administering the dose the Abelin reaction should be performed.

There are two great advantages in this scheme which in therapeutic effect is at least equal to any other course.

1. The time spent ashore is 25–39 days.
2. The result of this course on the types of syphilis

as expressed in terms of the Wassermann reaction and its relapse time are here tabulated, and it will be noted that one can give a very definite prognosis that in the earlier cases of syphilis (A. B. C. types) the Wassermann relapse, should it occur, will not appear till after the six months, and thus in times of financial stringency a man can go to sea for six months before returning for a second course.

—	W.R. before treatment.	Duration of treatment.	% Neg. at 3 mths.	W.R. relapse.
A. Sero-neg. primary .	—	25–39 days.	100	1 year at least
B. Sero-pos.	++	..	100	9 mths. ,,
C. ,, ,, secondary	++	..	95	6 ,, ,,
D. ,, ,, late ..	++	..	70	Indefinite.

It is essential that this course be followed sedulously and not modified. Any irregularity in dates nullifies the prognosis. Similar courses should be given every three to six months until a minimum of 30 intravenous injections has been given.

Commentary.

The routine treatment of acute gonorrhœa can be accomplished at sea in all ships if irrigation apparatus and intelligent supervision are provided. The treatment of chronic gonorrhœa in ships carrying surgeons can be continued at sea provided advantage is taken of the advisory and bacteriological services of shore clinics. The complete treatment for syphilis can be given at sea provided that ships' surgeons are trained in giving intravenous novarsenobenzene and a full record is kept of the case on Form V44 which should remain in the possession of the patient. Intramuscular bismuth can be given by surgeons otherwise unskilled in the treatment of syphilis, and at the end of the voyage the patient should be transferred for novarsenobenzol treatment to a shore clinic (V44 being issued).

In ships without surgeons the instructions given in the "Ship Captain's Medical Guide" should be followed and advantage taken of the advice of shore clinics (which can be obtained through the port sanitary inspectors) until a home port is reached and the ship's company is paid off. The captain or ship's surgeon should never give the patient reason to believe that he is cured, without clinical and bacteriological proof.

Shore clinics may help by offering seamen intensive treatment for a period of four to six weeks every three to six months until the minimum of 30 intravenous novarsenobenzol injections has been given.

I have to thank Dr. A. A. Mussen, Medical Officer of Health, City and Port of Liverpool, for permission to publish this article.

MENTAL HOSPITAL REPORTS.

The SOUTH YORKSHIRE MENTAL HOSPITAL at WADSLEY, near SHEFFIELD, had 1912 patients on the books on Dec. 31st last. There was a recovery-rate of 37·6 per cent. and a death-rate of 10·5 per cent. Autopsies were held on 91·9 per cent. of the fatal cases. Many of those discharged recovered were sent out first on a trial period with money grants. New open-air dormitories became available during the year, but the institution is still crowded in the day-time. There were four cases of typhoid, two of diphtheria, three of erysipelas, one of dysentery, and one of scarlet fever, and an epidemic of influenza with some pneumonia. Thirty-two cases of tuberculosis are under care. The visiting surgeon saw a number of patients and performed several operations. The X ray department is now in full use, and a new sanatorium for cases of tuberculosis and dysentery is being built. During the year 24 men had parole within the grounds and another ten outside it. The out-patient clinics at the Sheffield general hospitals recorded 125 new cases and 22 after-care cases at the Royal Infirmary and a total of 105 cases at the Royal Hospital. The laboratory carried out a large number of routine investigations, including a systematic search for typhoid carriers and a routine Widal test on all new admissions. The Meinicke reaction is also tested on all new cases. General paralytics are treated by induced malaria; of the 21 inoculated during the year five have been discharged and five have improved but are not fit for discharge. Three cases are under treatment by sulphosin. There are 44 post-encephalitics, nine new cases having been admitted during the year. In the ultra-violet light department 39 cases were treated, including a number of skin diseases. The visiting dentist now attends weekly and saw 442 patients last year in the new surgery. During the year 11 attendants and nine nurses obtained their R.M.P.A. certificate, bringing the total to 63 attendants and 32 nurses certificated.

The ROXBURGH DISTRICT BOARD OF CONTROL had 384 patients resident in its institution on May 15th last, an increase on the preceding year. In about one-third of the admissions there was no hope of recovery, yet there was a recovery-rate of 34 per cent. The death-rate was 7·2 per cent. and 11 post-mortem examinations were made. The general health was good and there were no epidemics. A dental surgeon has visited regularly and seen all new cases. Occupational therapy has been commenced and 116 men and 89 women have been in regular employment. There are, however, a large number of senile cases and 61 defectives.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 15TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 107 (last week 92); scarlet fever, 2377; diphtheria, 1491; enteric fever, 45; pneumonia, 831; puerperal fever, 50; puerperal pyrexia, 128; cerebro-spinal fever, 8; acute poliomyelitis, 10; acute polio-encephalitis, 1; encephalitis lethargica, 11; dysentery, 7; ophthalmia neonatorum, 98. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 18th–19th was as follows:—Small-pox, 186 under treatment, 1 under observation (last week 161 and 6 respectively); scarlet fever, 1923; diphtheria, 2207; enteric fever, 15; measles, 85; whooping-cough, 109; puerperal fever, 21 (plus 6 babies); encephalitis lethargica, 121; poliomyelitis, 1; "other diseases," 35. At St. Margaret's Hospital there were 13 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 23 (0) from measles, 4 (0) from scarlet fever, 13 (0) from whooping-cough, 39 (9) from diphtheria, 55 (17) from diarrhœa and enteritis under two years, and 25 (5) from influenza. The figures in parentheses are those for London itself, against which it may be noted that there was no single death during the week from either small-pox, enteric fever, measles, scarlet fever, or whooping-cough.

The fatal cases of enteric fever outside London were reported from Wigan and Sheffield. Measles accounted for 6 deaths at Hull, 4 at Bristol, 2 each at Birmingham and Newcastle-on-Tyne. Leeds reported 2 deaths from whooping-cough. Three fatal cases of diphtheria were reported at Liverpool and at Leeds. Diarrhœa accounted for 6 deaths at Liverpool, 5 at Sheffield, and 3 at Birmingham.

The number of stillbirths notified during the week was 279 (corresponding to a rate of 42 per 1000 births), including 55 in London.

CORRESPONDENCE

PREVENTION OF SCARLET FEVER IN SCHOOLS.

To the Editor of THE LANCET.

SIR,—The paper by Dr. J. A. Glover and Dr. F. Griffiths which appeared in your journal on Oct. 11th, under the title An Outbreak of Scarlet Fever at a Preparatory School, will lead some to believe that very little can be done to check an outbreak of scarlet fever in a school. The authors are medical officers from the Ministry of Health and it will be assumed that they speak with knowledge and authority. It is to correct this impression of our helplessness in face of an outbreak of scarlet fever in a school that I venture on writing this note.

What do the authors say? Shortly, it is this. In a modern school house near the sea, with about 50 boys, ages varying from 8–14 years, scarlet fever breaks out, seven cases occurring between Nov. 12th and 21st; each patient is promptly removed to hospital. No more cases occur for more than two months, but about ten days after the reassembly of the school after Christmas four more cases are found in rapid succession. The school authorities then seek the advice of the Ministry of Health, especially on the question of preventing further spread of the disease. The authors did not advise immunity methods, and for the following reasons: the production of passive immunity by injection of scarlet fever antitoxin is not recommended on the ground that this immunity is too evanescent for use in a boarding-school and because the injected persons become sensitised to horse serum. (This last is of little practical significance for subsequent serum administration.) Active immunity by the Dick method, they say, takes too long and is too uncertain. The small experience of this method in English schools has not been encouraging (it would be interesting to know what their record of this is), though for the use of a hospital staff it may be very valuable.

Instead they undertook an elaborate bacteriological investigation, swabbing on three separate occasions increasing numbers of boys and staff (i.e., Jan. 31st, 19 boys; March 14th, all the boys remaining at school and certain of the staff; May 21st, all the boys and all the staff), and found on each occasion a number of carriers. Profuse carriers were isolated.

In spite of this the epidemic continued on its course unabated. Eighteen more cases occurred in the Lent term, and four cases in the summer term; in all 33 boys contracted scarlet fever out of about 50, so that we can take it that the disease exhausted all the available susceptible material, the remainder becoming immunised. The practical result of the authors' advice to this school as regards stopping the epidemic was thus insignificant; theoretically this investigation has a scientific interest, as it illustrates by bacteriological methods modes of spread of scarlet fever of which we were aware previously only clinically.

Now let us see what the Dicks themselves say about preventing an outbreak of scarlet fever at school. I quote from Schamberg and Kolmer's "Acute Infectious Disease," 1928:

> The Dicks have recently (*North-west Med.*, 1926, xxv., 200) stated "that the skin test for susceptibility to scarlet fever used in connexion with preventive immunisation with the toxin and the prophylactic administration of antitoxin, makes possible the control of scarlet fever epidemics. In an institution where adequate facilities for throat and nose cultures are available it is possible to get the *epidemic under control within 48 hours.*"

They then proceed to describe the procedure which is exactly similar to the one recommended for controlling a diphtheria outbreak.

I had some personal experience with this method, but applied without the bacteriological investigation at a girls' day school in 1928; this was a good class high school and preparatory school of 250 girls in Salford (ages 5–17 years). Fifteen cases had occurred in the autumn term, and the usual methods of disinfection, isolation, inspection of milk, &c., were undertaken without checking the disease. At the end of January I was approached and Dick-tested 135 girls—their parents having given consent—and found 86 of them susceptible to scarlet fever; 78 of these were inoculated (the other eight refused to go on) at weekly intervals with 500, 2000, and 8000 skin test doses of scarlet fever prophylactic, the more strongly marked reactors getting 250, 1000, and 5000 S.T.D. Of these girls, 73 were retested three weeks later after the third dose and 47 were found to have become negative; 26 still gave positive reactions, but these were considerably fainter. Eighteen of these were given a fourth inoculation. In the Lent term there were only two more cases of scarlet fever in the school, in the group which was not tested. In this school just over half the girls were tested; this work was undertaken, as it happened, at the time of the Australian accidents with diphtheria prophylactic, and I had to address the parents on the day the news was in the daily papers. I have no doubt that with more efficient canvassing the proportion of consents could be increased. But even so, although of course there were probably a number of susceptibles left in the 114 girls who were not tested, the proportion of immunes in this group would in all probability be higher than in the group tested, for the reason that most of the girls who had had scarlet fever previously would fall into this group (the girls who had scarlet fever in the previous term were in this group). We can take it then that the majority of susceptibles were rendered immune and that the whole school population (herd) became much more resistant to the spread of the infection, so that if a certain equilibrium had been reached—i.e., cases occurring at intervals—the disease thus spreading slowly, the raising of the resistance of the school herd would tend to upset these conditions in the direction of checking the spread of the disease. It is thus not so important as may appear at first sight to immunise everybody in a population for the purpose of checking an outbreak of a disease, as it is to immunise even a part of it. The larger the proportion of the whole it is, of course, the better will be the result.

I am, Sir, yours faithfully,

D. EDGE,
Medical Superintendent, Ladywell Sanatorium (Infectious Diseases), Salford.

Nov. 24th, 1930.

A SOCIETY OF PHYSICAL MEDICINE.

To the Editor of THE LANCET.

SIR,—The statement on p. 1147 of your last issue that "on Nov. 14th, a society was formed, but its proposed policy did not satisfy a considerable group of those affected" does not convey the correct facts. As the Society constituted on Nov. 14th made no statement of policy, there could be no question of its policy not satisfying any group. Both at the publicly advertised meeting on Nov. 14th (which was

attended by about 40 representatives of every branch of physical medicine), and at the previous meeting on Oct. 24th, when the resolution to form a Society of Physical Medicine was first taken, the question of the Royal Society of Medicine was fully discussed. It was agreed at both meetings by the large majority that to establish an independent and individual society was the only satisfactory and practical course. This policy is, perhaps, not in agreement with the wishes of those general physicians who have little more than an academic interest in physical medicine, but it *is* the policy favoured by the great majority of the younger and active physiotherapists in whose hands lies the future of this important branch of medicine. It is, therefore, the policy that must prevail.

I am, Sir, yours faithfully,

R. KING BROWN,
Acting Hon. Secretary, the British Society of Physical Medicine.

Nov 21st, 1930.

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—The report on Ramisection in THE LANCET of July 19th, under the authorship of a number of distinguished medical men, is so full of inaccuracies that a reply is demanded.

In the first place the authors have not worried about accurate references and have attributed the operation of ramisection to J. I. Hunter and N. D. Royle. This is incorrect. I published my first paper on Jan. 26th, 1924, on A New Operative Treatment of Spastic Paralysis and its Experimental Basis. Hunter's contribution to the experimental side of this work was not made until nine months after the operation had been performed on the human subject. His paper, The Significance of of the Double Innervation of Voluntary Muscle Illustrated by Reference to the Maintenance of the Posture of the Wing, was published on June 14th, 1924. These are the original references and are found in the *Medical Journal of Australia*.

Next let me deal with adverse reports. The operations of sympathetic ramisection are difficult and require special knowledge of the sympathetic nervous ystem. This is possessed by few and the results of the trial operations are necessarily disappointing if the correct tissues are not divided. Bankart, for example, has reported in the *Journal of the Royal Society of Medicine* the results of ramisection in which he failed in a number of cases to get even vaso-motor changes. The explanation is obvious.

The next point is that I chose the worst patients for operation and in this remark I am supported by my friend Dr. Gordon Pugh of Queen Mary's Hospital, Carshalton, where my operations were performed. Now let me deal with the patients.

Case 1 of the report.—This patient had had encephalitis lethargica and exhibited the sequelæ including athetosis. The latter is not mentioned in the report. On this patient I performed my old operation of sympathetic ramisection and this I have discovered since is not a suitable procedure for athetosis. I recently (Oct. 6th, 1928) introduced a new operation, thoracic sympathetic trunk section, in which all the sympathetic fibres going to the upper limb are divided in addition to having effects on the cerebrum.

Case 2.—This patient had had encephalitis lethargica and fell backwards when she attempted to walk. The operation of "double lumbar ramisectomy" is described as producing no improvement, yet she was walking according to the case records on Feb. 25th, 1928, and further could walk comfortably sometimes. She retrogressed subsequently on account of the progressive cerebral sclerosis associated with encephalitis, but that does not justify the statement that no improvement appeared.

Case 3.—This patient was a boy with left spastic hemiplegia of which the onset was sudden. Flaccid paralysis followed after a restless night and developed into spastic paralysis. The patient could not run. He could not use his hand and his thumb was tightly flexed in his palm. The day following the operation (May 11th, 1927) this patient could control voluntarily his fingers and thumb and could supinate eight days later. Yet the results are attributed to re-education. He was able to run in July, 1927. On Feb. 7th, 1928, Mr. Trethowan said, according to case-history, that the hand was very good. Such results in re-education of spastic paralysis have never been obtained in any of the clinics I have visited in various parts of the world.

Case 4.—This patient had severe spastic paraplegia with loss of voluntary control of his lower limbs. He had previously had obturator neurectomy and adductor tenotomy performed by Mr. Elmslie without results so was, apparently, not a good subject for a trial operation. Ramisection produced immediate improvement in range of movement and alteration in reflexes while I was in Carshalton, but these are not mentioned in the report.

Case 5.—This patient was seen by Mr. Trethowan who said he presented "a not very bad case of spastic quadriplegia, able to walk with a little help." The important point is that the patient was unable to walk before operation and walked unaided three weeks after ramisection. The report goes on to say "there is no evidence to show that bilateral lumbar ramisection in this case produced any result, such improvement as was ultimately seen being accounted for by the lengthening of the tendo Achillis on both sides which was subsequently performed." When I saw this patient in October, 1930, I found that the lengthening of the tendo Achillis had led to a severe double talipes calcaneo-valgus. The patient has thus lost the support of the calf muscles, cannot raise his heels off the ground, and has consequently re-lost his balance. The necessity for lengthening the tendo Achillis in this patient was disputed by the signatories when I said it should be done. Now it as been done with what the committee calls "improvement" but what I would classify as a calamity. The patient now uses hip and knee muscles well but the support at the heel is lacking.

Case 6.—I saw this patient also. She had athetosis and as such was not suitable for my old operation of sympathetic ramisection. In spite of that she has improved even with regard to opening her hand.

Finally, the opinion is expressed in the report that "the diminution of tone was no more than may be seen after *any* major surgical procedure with post-operative shock." I simply ask the signatories which operation in the lumbar region produces a diminution of tone in the lower limbs and for what length of time. My first patient exhibits changes in tone in the limb on side of operation seven years after operation. Surely the committee does not infer that he still has surgical shock?

Very sweeping conclusions are drawn from six cases. Surely it would be more advantageous for the committee to defer judgment until they had examined a greater number of patients. I have seen the results of approximately 600 operations and I would refer any honest seeker after truth to my paper in a recent number of the *British Medical Journal* on the results of ramisection as experienced by my patients.

I am, Sir, yours faithfully,

N. D. ROYLE.

Nov. 15th, 1930.

DENTAL CARIES AND DIET.

To the Editor of THE LANCET.

SIR,—It seems to me that undue hopes with regard to a certain method of preventing dental caries may be aroused by your leading article of last week. About a decade ago, the theory of a vitamin-C deficiency as the cause of caries was taken up with extraordinary enthusiasm in America, but under the fire of criticism during the last two or three years this theory has, I think, been largely disposed of, and probably accounts for the change over to the vitamin-D theory. In this country we have been rather regaled with investigations and inferences, firstly on fat-soluble A and later on vitamin D, in attempts to explain the prevalence of caries. But here again neither of these theories has stood up to the fire of criticism. Further, they have been tried in a very practical way, but what do we find? According to the *Dental Surgeon* (April 5th, 1930) "we are already meeting with cases where children are devastated with caries, who have been dieted with cod-liver oil, and where the fond and anxious parents have pinned their faith to this food—in vain."

That a diabetic diet—in which sugar and carbohydrates generally are reduced to a minimum—will correspondingly reduce the incidence of caries, is recognised by those of us who hold that sugar lodging about the crevices and retention areas of the teeth is the principal cause of dental caries, and the accuracy of this view no doubt accounts for the good results recorded among children on the diabetic diet, especially when this contains meat, fruit, and vegetables. Apart from statistical investigations and the clinical evidence which shows this theory to be true, recent investigation [1] by Prof. R. W. Bunting and his collaborators shows that when the amount of sugar is reduced in children's diet *B. acidophilus* tends to disappear and dental caries correspondingly becomes arrested.—I am, Sir, yours faithfully,

Harley-street, W., Nov. 23rd, 1930. J. SIM WALLACE.

DIAGNOSIS OF PULMONARY TUBERCLE.

To the Editor of THE LANCET.

SIR,—In his Mitchell lecture, reported in your issue of Nov. 22nd, Dr. Burrell gives a welcome survey of the difficulties inherent in the diagnosis and management of early cases of pulmonary tuberculosis, and affords a very present help and encouragement to some of us who, labouring in the wide spaces of general medicine, may sometimes find it hard to maintain the confidence in our opinions which is essential to a successful issue when grappling with this particular problem. In this connexion it may be of interest to mention two or three points which have been impressed upon me during the years of practice.

Whereas, for the most part, the clinical picture presented by persons who have suffered from hæmoptysis, other than that of tuberculous origin, is sufficiently characteristic to render mistaken diagnosis unlikely, in my experience one of the most tricky and misleading conditions is the early morning hæmoptysis resulting from gingivitis, which is not seldom diagnosed as being due to early tuberculosis, more frequently perhaps than is hæmoptysis from any other non-tuberculous lesion. It seems that the very simplicity of the condition is the reason that it is overlooked; the consequences of a mistake so glaring are correspondingly grave.

An interesting point made by Dr. Burrell is that physical signs are very occasionally the first indication of disease. It is difficult to account for the absence of all symptoms in these cases which are of importance because unexpected and because, as Dr. Burrell says, it is becoming the custom in some schools to belittle the value of physical signs. Some time ago, during examination for life insurance of a young man whom I had known for some years, I came upon a crop of persistent moist sounds over a patch of lung internal to the angle of the left scapula. There were no other signs of disease, and the patient looked and felt perfectly well. A postponement of the insurance was followed by a X ray examination which confirmed the suspected diagnosis of tuberculosis, and subsequently cough developed with tubercle bacilli in the sputum. Eventually he made a good recovery and is now an apparently healthy married man.—I am, Sir, yours faithfully,

Torquay, Nov. 22nd, 1930. A. E. CARVER.

[1] Dental Cosmos, October, 1928, and April, 1930.

THE CHARTERHOUSE RHEUMATISM CLINIC.

To the Editor of THE LANCET.

SIR,—All those working on the rheumatic problem will be interested in the figures published in your last issue (p. 1151), but I suggest that they would be still more interested if the Charterhouse Clinic would produce similar figures which could be analysed by ordinary statistical methods. In the first table, the types treated are too diversified to enable any definite conclusions to be made from the figures given, as they include types of rheumatic disease not generally attributed to infection. If a scientific evaluation of vaccine therapy is to be effected, I suggest that the inquiry should be confined to one main group, such as rheumatoid (infective) arthritis, and that the results should be presented in such a manner that they can be examined by the usual mathematical methods. An inquiry such as this has been proceeding at the Devonshire Hospital for several years, on the following lines:

Type of case = Infective arthritis (all cases of subacute rheumatism, fibrositis, osteo-arthritis, &c., rigidly excluded); Total number of cases = 330; Total replying to postcards = 273; Period covered by inquiry = January, 1928 to January, 1930; Vaccine = *Streptococcus viridans*; No difference in figures considered significant unless greater than the possible variation due to chance.

In view of the tendency of this type of case to spontaneous exacerbation and remission it is necessary, in attempting to estimate the value of treatment, to compare the number of cases improved after treatment, with those improving before treatment was commenced, and to obtain similar data in a control series of adequate size. As far as a comparison is possible, the total improved among the patients under treatment at the Charterhouse Clinic is much the same as on discharge here, 92 per cent. as against 91·35 per cent. The total *subsequently* improved in vaccine treated cases was 61 per cent. as compared with 77·4 per cent. at the Charterhouse Clinic. This difference is probably accounted for by the fact that all our cases were of infective arthritis. On admission 48 per cent. of our vaccine-treated patients stated that they were improving. These two figures (48 per cent. and 61 per cent.) may be regarded as strictly comparable, as both (the condition on admission and the reply to the postcard) represent the subjective condition as given by the patient. The difference between these two figures (61%−48% = 13%) is barely significant when the standard of deviation is considered. When the figure of 13 per cent. is compared with a similar figure in a control series of 550 non-vaccine treated cases, the difference (3 per cent.) is obviously of no significance. I am, Sir, yours faithfully,

PHYLLIS M. CONGDON, M.D., Dipl. Bact.,
Bacteriologist, Devonshire Hospital, Buxton.
Nov. 25th, 1930.

OBITUARY

DAME MARY SCHARLIEB, D.B.E., M.D., M.S. Lond.,

CONSULTING GYNÆCOLOGIST, ROYAL FREE HOSPITAL.

THE critical state of Dame Mary Scharlieb's health has been known to the public as well as to her immediate circle for a long time; her death occurred on Nov. 21st at the residence of her son, Dr. H. J. Shirley.

Mary Dalcomb Scharlieb was born in London in 1845, the daughter of William Candler Bird. The mother survived by only a few days the birth of the infant, who was temporarily confided to the care of her grandmother; for her father, who had just become a member of a firm in Manchester, departed to make a new home there. Mary Bird soon, however, joined him and was educated at boarding schools in Manchester, New Brighton, and finally in London. Her father made a second marriage, and she acted as governess to three small half-sisters, the children of a kind and wise step-mother, until, when she was 20 years old, she met her husband, William Mason Scharlieb, a student at the Bar, who was intending to practise in Madras. Marriage followed quickly on engagement, and in 1865 the young couple left for India.

DAME MARY SCHARLIEB.

Photograph by Elliott and Fry.

Dame Mary in her short and interesting "Reminiscences," describes how, after the birth of her second child, she received the impetus which determined her career. Her husband was editing the *Madras Jurist*, and she assisted him in collating material and writing précis for this journal. In 1871 there came to her notice in this way Fayrer's work on medical jurisprudence, and the description of the suffering of Hindu and Mahometan women in childbirth, under the *purdah* rules, so affected her that she determined to assist as a nurse at the lying-in hospital at Madras. One year of such work sufficed to assure her that a knowledge of midwifery alone would not make her a competent adviser to native women, and she determined to return to England and take advantage of the movement for the medical qualification of women which had been led by Sophia Jex Blake and Elizabeth Garrett Anderson. The commercial bad fortune of her father indirectly led to the achievement of her wishes. Mr. Bird's firm fell on evil days, and William Scharlieb offered hospitality to his wife's father and step-mother and their children. As a consequence, under new family arrangements, Mary Scharlieb became free to pursue her medical studies in Madras. In 1878 she obtained the diploma of L.M.S. and M. from the Madras Medical College, and she was supported by the Madras Government in her intention to graduate in medicine in England. Accordingly she returned to London and joined the London School of Medicine for Women, which had shortly before been affiliated to the Royal Free Hospital. At this period she received much practical help from Prof. (now Sir) Edward Sharpey-Schafer, then assistant professor of physiology at University College; while Florence Nightingale, Sir Henry Acland, and Elizabeth Garrett Anderson gave her warm encouragement.

This was a stirring period in the medical education of women. In 1875 the London School had started with a three years' curriculum—the statutory period of that date, but the medical schools attached to the teaching hospitals refused to admit the women students, and the examining boards would not accept their certificates of attendance. The question whether the Medical Acts were intended to confine the practice of medicine to men having been settled in favour of the broader view, Russell Gurney, M.P. for Southampton and Recorder of London, succeeded in the House of Commons with a short permissive Bill giving medical examining boards the power to admit women to their examinations. In the same year the treasurer of the new school, James Stansfeld, M.P. for Halifax, entered into negotiations with the Royal Free Hospital, to which institution no male students were attached, and the authorities of the hospital were found willing to admit women students to the wards on a guarantee against possible loss of subscriptions. Between 1877 and 1882, the period covered by the original agreement with the Hospital, the School made progress, and while the number of students was still small their quality was high; among Mary Scharlieb's co-students, when she entered were, for example, Helen Prideaux, Annie McCall, and Julia Cock, who later filled the post of Dean. At the intermediate examination in medicine at the University of London, in 1881, the Gold Medal and exhibition in anatomy were awarded to Helen Prideaux, whose tragic death occurred three years later, while Mary Scharlieb in the same year took first-class honours in materia medica and forensic chemistry, following up these successes by obtaining, in the examination for the M.B. degree, the gold medal and exhibition in obstetric medicine, with honours in medicine and forensic medicine.

After a short period of post-graduate work in Vienna, where she attended special courses at the Frauenklinik and under the famous Politzer, Mary Scharlieb returned to London, preparatory to following her original intention of practising in Madras as an obstetric physician. It was now that Queen Victoria received her at the instance of Sir Henry Acland, and commanded from her a plain account of the sufferings caused to Caste and Gosha women by their inability to avail themselves of the services of male doctors. The Queen was deeply affected by the shocking narrative, which later was repeated, at special request, to the Prince of Wales (King Edward VII.). The Royal interest thus manifested in her plans was of great value to Mary Scharlieb when she arrived again in India in 1883. She was immediately made lecturer on her subjects in the Madras Medical College, was appointed to an examinership in the College, and

later became medical superintendent of the Royal Victoria Caste and Gosha Hospital, whose foundation was due to her energies, assisted by Lady Grant-Duff and Surg.-General Furnell. For the next four years she conducted a large medical practice in Madras single-handed, for there was no other woman practitioner available, and no male doctor would have been permitted to assist in her ministrations to Indian women. But by 1887 excessive work had so told on her health that she was obliged to recognise the sense of the medical advice which ordered her to England without delay.

She returned to London and has put it on record that she was received with helpful kindness by many of the leading members of the medical profession aware of her intention of carrying on gynæcological and consulting practice. She was appointed joint lecturer on medical jurisprudence in the School of Medicine for Women, and, although she failed to obtain a place on the staff at Great Ormond-street, she was appointed physician to out-patients at the New Hospital for Women, which, thanks to the energies of Mrs. Garrett Anderson, had developed from a small dispensary into the hospital in the Euston-road which is now known as the Elizabeth Garrett Anderson Hospital. Here she worked for many years with notable success. But she had the resolution also to continue academic study, for she proceeded to the M.D. degree in 1888, while in 1896 she was the first woman to obtain the M.S.

Her Indian work now stood her in good stead, and her operating theatre in the Euston-road hospital was often visited by colleagues who came to see her methods. To their judgment, to some extent, must have been due the next step in her career, for in 1892 Dame Mary was appointed gynæcologist to the Royal Free Hospital, where a vacancy had just occurred. This was the first time that a woman had held any position on the visiting staff of a general hospital, and not only men viewed the appointment with some apprehension. But she disarmed criticism alike by her surgery and her attitude towards all with whom she worked, colleagues in the wards and the nursing staff. In 1902, at the age of 57, she was appointed gynæcological surgeon. In 1905, at the age limit of 60, her services were so valuable to the hospital that she was reappointed for another year. She was again reappointed in October, 1906, and again in 1907. She resigned her post at the end of 1908, when she was appointed consulting gynæcological surgeon to the hospital. When her resignation was accepted, the board gave a full and long expression of their indebtedness for her valuable surgical work and for the services she had rendered so long to the hospital. They mentioned that her relationship with the board and her medical colleagues was the most harmonious possible during her term of office and they expressed their very great regret that she could no longer hold the post. She never lost touch, however, with the hospital, and as President of the London School of Medicine for Women she interested herself very much in the welfare of the staff and the students, keeping up her connexion with those who were entering the medical profession. Perhaps even stronger than her enthusiasm for surgery was that for the due training of medical women.

Her professional work outside the hospital was notable. Before women were admitted to the medical societies she had been an active member of the Association of Registered Medical Women which met at the hospital in Euston-road, and there she frequently spoke and read scientific papers. Later, when the Obstetric Society opened its doors to women, she took part from the first in debates, and with the formation of the Royal Society of Medicine she became a prominent member of the Obstetric Section. From the start until quite recently she carried on a large consulting practice, performing major operations, and enjoying the confidence of a large number of suffering women. She was a member of the Royal Commission on Venereal Diseases which finally reported in 1916, and in the following year she was made C.B.E. In 1926 she was made D.B.E.

In the social and philanthropic sides of life Dame Mary Scharlieb had many interests. She was honorary treasurer of the Royal Medical Fund Guild, and of the Women's League of Service for Motherhood, she was a justice of the peace, doing admirable work in the Children's Court, and she supported numerous philanthropic institutions. But always she found time to lead a full private life and many friends have happy memories of her hospitality. Her husband died in 1901. She had three children, two sons and a daughter, the younger son, Dr. Herbert John Shirley, C.M.G., and the daughter entering the medical profession. Her elder son, a soldier, who had also earned the distinction of C.M.G., predeceased her about a year ago, while her daughter, Dr. Elsie Scharlieb, died in 1926. Until the death of her daughter Dame Mary and she had lived in the same house in Harley-street in which the mother commenced practice; when the house was pulled down she went to live with her son, who by changing his name avoided confusion with his mother. Dr. Shirley during the later years of his mother's practice helped her in every way, especially as an anæsthetist in her operation cases and in the after-care of patients. It is from Dr. Shirley we learn of the peaceful end, for Dame Mary's mind remained perfectly clear and she was free from all acute pain.

Mary Scharlieb leaves behind her fragrant memories. An exponent of high endeavour, every action was dictated by the desire to benefit humanity, following the Christian example as she viewed it. Pity for suffering supplied the first impulse; intention to give to suffering her best aid encouraged her, as a middle-aged woman and the mother of a family, during the tedium of class-rooms; and a whole-hearted devotion to her science lay behind the strenuous and successful routine of her daily life. She took holiday rests in quiet places, using the leisure now and again to publish a book in popular style on subjects related to medicine or on social affairs with which her experience fitted her to deal. She wrote a modest autobiography under the title of "Reminiscences." And she is said to have confessed to two social ambitions—to be presented at Court and possess a diamond necklace; when both wishes were attained she confessed "Now I have my two vanities."

Dame Mary Scharlieb was a good citizen, a devoted wife and mother, a great surgeon, and a very human person.

HERBERT SNOW, M.D. Lond.

Dr. Snow, who died on Nov. 20th at St. Leonards-on-Sea, was nearly 84 years of age. He was on the surgical staff of the Cancer Hospital, Brompton, from 1876 to 1905, and published a compendious treatise on cancers and the cancer process. He was at that time a keen critic of the theories then in vogue, and set out in our own columns sound reasons

why cancer could hardly be due to a micro-organism, and why the so-called parasitic protozoa were nothing more than a kind of endogenous cell-formation. Later in his career he promulgated theories of cancer which in their turn were criticised, and the latter part of his life was largely given up to an attempt to demonstrate the futility of physiological research as a means of promoting medical science. From 1908 on he was consulting surgeon to the National Anti-vivisection Hospital at Battersea.

EWAN RICHARDS FRAZER, M.B. Oxf.

Dr. E. R. Frazer, whose death on Nov. 15th was announced in our columns last week, was the son of Mr. John Frazer, of Sydney, and was born in 1867. He entered Balliol College, Oxford, in 1887, intending to study history, but was soon attracted to the study of pathology by his friendship with James Ritchie who was then collaborating with Burdon Sanderson. After taking his B.A. in 1892 he went on to the London Hospital for his clinical work, graduating in medicine at Oxford in 1898, and obtaining the Conjoint diploma in the same year. He visited Copenhagen, studying there under Salomonsen at a time when Dreyer was acting as his first assistant. Frazer was then regarded as a coming man in pathology, and papers on pathological subjects continued to appear from his pen, although his systematic study was interrupted by his return to Australia on the death of his brother. In another way, however, pathology at Oxford owes him a lasting debt, for it was due to his generosity while still an undergraduate that the school of pathology was provided with a department of its own. The donation was made under the following circumstances.

"Seated one night by my fireside," writes Prof. Arthur Thomson, "for he often dropped in to have a smoke and chat with me, Frazer surprised me by saying that he was anxious to do something to help the medical school. I confess, at first, I did not quite see the drift of his remark, until he explained that he had a considerable balance lying to his credit at the bank, and that he did not know what to do with it. At that time the University was sorely in need of money, for in spite of the efforts of Sanderson and Ritchie, the University was without a pathological laboratory, wherein provision could be made for the appropriate teaching of the subject, I set the facts before him, with the result that he handed me a cheque for £5000. Knowing full well the difficulties that had arisen in regard to the establishment of other departments in the early medical school, I suggested the propriety of his putting the money in trust with me and his lawyer, until such time as the University was willing to comply with such conditions as we thought necessary to impose before the University obtained possession of his gift. This was a new departure, but we had previously learned that opposition had been raised to building grants on the grounds that the departments concerned were not in any way to be associated with experiments on animals. In this way the trustees of the benefaction were in a position to arrange terms with the authorities of the University.

"It was not altogether an agreeable business for a comparatively young man, as I was then, to lay down conditions to a Vice-Chancellor, but it was all finally settled in an amicable manner, and Frazer's £5000, supplemented by a contribution from the University, enabled the school to be provided in 1901 with a department, in which the late Prof. Ritchie so successfully carried out the teaching of pathology until the time that we were deprived of his services by his appointment to the chair of bacteriology in Edinburgh. Since then, and until the University profited by the benefaction of the Sir William Dunn trustees in 1926, Prof. Dreyer, appointed Ritchie's successor, continued to occupy the original building, which is now utilised as the up-to-date department of the professor of pharmacology, Dr. J. A. Gunn.

"The incident," Prof. Thomson concludes, "is in my experience unique, and well worthy of being recorded to the memory of the big-hearted undergraduate who recognised in such substantial measure the debt he owed to his alma mater."

Recently Dr. Frazer had lived in comparative retirement at East Grinstead and in London, but not long ago he founded a scholarship to be held at Balliol College by a student of natural science from Winchester College, in memory of his eldest son who was killed while ski-ing in Switzerland. Dr. Frazer was in his sixty-fourth year.

JOHN HAMMOND TEACHER, M.D., F.R.F.P.S. Glasg.

WE have to record that Prof. Teacher died on Nov. 21st at Glasgow, where his life was spent from boyhood. A son of the late William Teacher of that city, he was born in 1869, and was educated at the Academy and at the University. Graduating in arts in 1888 and in medicine four years later, he first held resident posts at the Western Infirmary and then was appointed assistant curator of the museum, left to Glasgow University by William Hunter. In 1899 he published a catalogue of the anatomical and pathological specimens in this collection, and in the same year was appointed assistant to the professor of physiology. In 1903 he received the Bellahouston medal on graduating as M.D., and published his important thesis on chorion epithelioma in the *Journal of Obstetrics of Gynæcology of the British Empire*. He now became assistant to the professor of pathology, and this led on to the lectureship in pathological histology (1908). He joined the staff of St. Mungo's College as professor of pathology in 1909, and succeeded to the St. Mungo (Notman) chair of pathology in the University in 1911. During this period he was also working for the hospitals, first at the Western Infirmary and the Royal Hospital for Sick Children, and from 1909 onwards as pathologist to the Royal Infirmary. His research and interests were varied. Although not an anatomist in the stricter meaning of the term, his name was well known to all anatomists and embryologists. He followed with sustained enthusiasm the drawn-out search for material which could throw light on the conditions and problems of early development; in this he made full use of the opportunities afforded by his work as a pathologist, and was able to call on skilled experts for help in deciphering the results of his labours. In this way he came to be associated with Prof. T. H. Bryce and Dr. Munro Kerr in the establishment of present-day views about the early stages of the embedded ovum as well as on the nature of the embedding itself. Perhaps the most widely known of the products of this collaboration is the famous Bryce-Teacher ovum, which at one time stood as the youngest known stage in human development. This ovum was first brought to public notice some 22 years ago. Its position as the earliest ovum is no longer unchallenged, but the ovum retains and will always

have a great value in descriptive as well as historical embryology. The careful calculations on well-founded data which went with it, moreover, have altered the views generally held about the ages to be assigned to human embryos. For these contributions to our knowledge—and for others less widely known—Teacher's name will be held in remembrance for many a year among anatomists and embryologists.

As a pathologist he saw the whole development of the Glasgow school since Coats first convinced the University that his subject needed and deserved academic recognition. For many years he was one of the solid elements of British pathology, whom everyone respected as a sound and reliable worker and to whom everyone referred for information on his special topics. As long ago as 1894, in collaboration with Coats, he published an account of a monster, and his subsequent interests were largely obstetrical and gynæcological. Apart from his studies on the ovum he will be chiefly remembered for his work on chorion-epithelioma and the symmetrical cortical necrosis of the kidneys associated with pregnancy. More recently he pointed out in his interesting and practical way that post-operative vomiting may leave active gastric juice in the lower end of the œsophagus, leading to ante-mortem digestion and sometimes hæmatemesis. "He had a lot of nervous idealism in his composition," writes a colleague. "It ran out perhaps more in his passion for yachts than in the post-mortem room, but he really cared about pathology and set himself a standard of thoroughness which was wholly admirable."

Prof. Teacher married in 1904 Rachel, daughter of the late J. M. Hutcheson, of Greenock.

GEORGE HUGH KIDD MACALISTER, M.D. Camb., M.R.C.P. Lond., D.P.H.

Dr. Hugh Macalister, who died in London on Nov. 2nd after a long illness, had been Principal of King Edward VII. College of Medicine at Singapore since 1918. Born at Dublin in 1879 he was the younger son of Dr. Alexander Macalister, later professor of anatomy in the University of Cambridge, and the brother of Edith, the wife of Sir Donald MacAlister. Hugh was educated at Charterhouse and St. John's College, Cambridge, continuing his medical course at Guy's Hospital and graduating in 1906. He then held resident house appointments at Guy's before he became assistant bacteriologist there, and later at the Lister Institute. He went to India in 1914 as pathologist to the Imperial Laboratory at Muktesar, and four years later migrated to Singapore, where he was professor of clinical medicine and lecturer on therapeutics, as well as principal of the school. Although well qualified in many branches of medicine and pathology, it is as an administrator that his name will be chiefly remembered, for he planned and raised funds for the new buildings of the Singapore College, which, in his hands, became a highly efficient school. He was an active member of the Pathological Society of Great Britain, and his papers cover such various ground as dysentery carriers, paroxysmal hæmoglobinuria, and immunisation in tuberculosis. For the last two years of the war he was on service in Mesopotamia with the rank of Captain I.M.S. His particular recreation was climbing. Principal Hugh Macalister married Margaret, daughter of William Moir, and leaves his widow with two young daughters.

MEDICAL NEWS

University of Cambridge.

On Nov. 14th the degrees of M.B. & B.Chir. were conferred on John Vaughan-Bradley.

Society of Apothecaries of London.

At recent examinations the following candidates were successful:—

Surgery.—E. Jacomb, Charing Cross Hosp.; L. A. Riddell, Univ. of New Zealand; and W. K. Schnarr, Guy's Hosp.

Medicine.—R. P. Davies, London Hosp.; L. A. Riddell, Univ. of New Zealand; and W. K. Schnarr, Guy's Hosp.

Forensic Medicine, Hygiene and Insanity.—G. W. Hinchliff, St. Mary's Hosp.; H. G. Hind, St. Bart.'s Hosp.; W. A. Naidu, London Hosp.; W. W. Parry, Guy's Hosp.; L. A. Riddell, Univ. of New Zealand; L. Sachs, St. Mary's Hosp.; and S. H. Thaler, Guy's Hosp.

Midwifery.—S. J. Bellgard, St. Mary's Hosp.; G. I. Benjamin, Univ. of Madras; C. L. Ferguson, London Hosp.; W. G. Kingston, Middlesex Hosp.; E. H. W. Lyle, King's College Hosp.; M. S. Mules, Royal Free Hosp.; and H. C. Pain, Univ. of St. Andrews and Middlesex Hosp.

The following candidates, having completed the Final Examination, are granted the diploma of the Society entitling them upon registration (under the Medical Acts) to practise medicine, surgery and midwifery: R. P. Davies and E. H. W. Lyle.

University of Liége.

On Nov. 15th the degree of M.D. *Honoris causa* was conferred on Dr. G. H. F. Nuttall, F.R.S., Quick Professor of Biology in the University of Cambridge.

Australian and New Zealand Medical Association.

The winter dinner of the Australian and New Zealand Medical Association in England will be held at the Trocadero Restaurant, Piccadilly, on Friday, Dec. 12th, at 7.45 P.M. for 8.0 P.M. Mr. T. P. Dunhill will preside, and the High Commissioner for Australia will be the official guest of the association. All medical visitors from Australia and New Zealand, whether members of the association or not, are invited to be present. The address of the secretaries is 26, Queen Anne-street, London, W. 1.

Royal Dental Hospital Dinner.

The annual dinner of the Royal Dental Hospital was held at the Trocadero Restaurant, London, on Nov. 22nd, with Dr. Harvey Hilliard in the chair. About 180 members of the staff, past and present students and visitors were present. The toast of the Hospital and Dental School was proposed by the Chairman, who emphasised the importance of systemic disease to dental work. He had become more and more impressed by the extent to which disease of the mouth had its origin in general disease or dysfunction—especially of the digestive organs—and he pleaded for closer coöperation between doctor and dentist, for the benefit of both and of their patient. Even a simple caries indicated that the patient was not in perfect health, and to fill a carious tooth was to treat a symptom and ignore a cause. Their hospital, he said, was the mother of dental hospitals and schools and the home of dental anæsthesia. Referring to the new in-patient department, he said that more beds were needed, and that he would like to see the institution of research beds with a research physician and of travelling scholarships. Sir William Goschen, responding to the toast, commented on the great strides made of recent years in hospital administration and nursing. He expressed his profound belief in the voluntary system, and said that one thing that did not change was the love for one's hospital. Mr. Harry Stobie, Dean of the Dental School, also in reply, referred to recent resignations and appointments, and to the resuscitation of the Students' Society. The health of the visitors was proposed by Mr. A. T. Pitts, who attempted to classify them on a zoological basis, but feared that those whom he classed among the edentata might resent the allusion to their personal deficiency. Sir John Rose Bradford replied on behalf of the guests, and the health of the Chairman was proposed by Dr. A. W. Oxford. After Dr. Hilliard's reply the evening concluded with a muscial programme.

A Hospital Lottery.

It is stated that the Government of New South Wales intends to introduce a lottery for the benefit of the hospitals of the State. It is believed that £500,000 per annum can thus be raised.

AT a Court meeting this month Dr. Hugh Stannus Stannus was sworn as Master of the Worshipful Company of Founders.

A New Roman Catholic Hospital.

The Institute of Trained Nurses of Our Lady of Compassion has acquired 18 houses in Barkham-terrace, Lambeth-road, opposite Bethlem Hospital, upon the site of which it is proposed to erect at a cost of £100,000 a hospital of 100 beds and a training school for nurses.

Cheyne Hospital for Children.

A small private ward is now available at this hospital in Cheyne-walk, Chelsea, S.W., for the reception of children of 3 to 13 years of age requiring a prolonged course of treatment, whose parents, whilst unable to afford a full nursing home fee, are able to pay more than the small maintenance charge for patients in the general wards of the hospital. Private patients eligible for admission include those suffering from osteomyelitis, anterior poliomyelitis, dislocated hip, surgical tuberculosis, certain forms of infantile paralysis, rickets, rheumatoid arthritis, chorea, and heart disease. Children will be admitted by arrangement with, and for treatment by, a member of the hospital medical staff; practitioners not acquainted with members of the staff should apply to the secretary. A weekly charge of from £3 3*s.* to £5 5*s.* will be made by the hospital.

Radon for Midland Hospitals.

The National Radium Commission has lent half a gramme of radium to the University of Birmingham for the production of radon at a rent of £120 a year and £30 a year for insurance. The Faculty of Medicine of the University will establish a rota for radon supplies, beginning in January next, embracing all hospitals recognised by the Faculty as teaching institutions connected with the University; general or special hospitals in the area, not recognised as teaching hospitals, but of a similar type and working on similar lines; and municipal and poor-law institutions. It is suggested that for the first year the charge for the supply of radon should be 1*s.* 6*d.* per millicurie.

Hospital for Sick Children.

The Prince of Wales, as President, has launched an appeal for £500,000 for the reconstruction and re-equipment of the Hospital for Sick Children, Great Ormond-street, London. The new building is to occupy the present site, it having been found impossible to acquire another equally suitable in the neighbourhood. The work will be carried out in instalments as means permit, but there will be no interruption of the hospital's activities. The wards will all face south and have balconies. The main block for patients will be set back 250 ft. from Great Ormond-street, and between it and an out-patients' block there will be a garden. The existing chapel and out-patients' hall will remain, and the staff will be housed in a separate building fronting Guilford-street.

Leeds Maternity Hospital.

Mrs. Stanley Baldwin last week opened extensions of this institution which have cost over £64,000, of which £8000 is still required. Beginning as a nursing home, the hospital is now one of the chief maternity hospitals in the country. In a speech following the opening ceremony, Dr. Arthur Hawkyard, Lord Mayor of Leeds, recalled that Dr. William Hey, who was Mayor of Leeds in 1787 and again in 1802, was in the habit of publicly dissecting the bodies of criminals from Wakefield gaol. Three courses of these anatomical lectures produced £112, which was given to the Leeds Infirmary.

Donations and Bequests.

Mr. Joseph Squiers, of Birmingham, left, among other bequests, £100 each to the Queen's Hospital, Birmingham, the Birmingham Skin and Lock Hospital, the Birmingham Ear and Throat Hospital, the Birmingham Eye Hospital, the General Hospital, Birmingham, the Birmingham General Dispensary, and the Royal Institute for the Blind, Edgbaston. After the death of his wife, the Birmingham Hospital for Nervous Diseases, the Royal Cripples Hospital, Birmingham, and the Children's Hospital, Birmingham, will each receive £1250 to endow an Ellen Squiers Cot or Bed.—Among other bequests, Miss Jessie Jane Donald, of Glasgow, left £1000 each to the Western Infirmary, Glasgow, the Royal Infirmary, Glasgow, the Victoria Infirmary, Glasgow, and the Scottish National Institute for Blinded Soldiers and Sailors; £500 each to the Glasgow Royal Cancer Hospital, the Royal Hospital for Sick Children, Glasgow, the Princess Louise Scottish Home for Limbless Sailors and Soldiers, and the Glasgow Ear, Nose, and Throat Hospital.—Mrs. Matilda King, of Clifton, Bristol, £1000 to Handel Cossham Memorial Hospital, Kingswood, Bristol; £1000 to the Bristol Royal Hospital for Sick Children and Women, St. Michael's-hill, Bristol, and £300 to the Bristol Medical Missionary Society.

Irish Medical Schools and Graduates Association.

The general meeting of this association will be held at the Piccadilly Hotel on Thursday next, Dec. 4th, at 7.15 P.M. On the same evening at 7.45 the association will dine at the hotel, with Dr. W. P. Kennedy in the chair and Sir Frederick O'Connor as official guest. Tickets may be had from Mr. James Carver, St. George-in-the-East Hospital, London, E.1.

King Edward VII. Hospital for Officers.

This hospital, which was founded by Miss Agnes Keyser ("Sister Agnes") at 17, Grosvenor-crescent, London, during the South African War in 1899, has now been incorporated by Royal Charter. At the first meeting of the council last week a message was received from the King expressing his wishes for the continued welfare of the hospital under the new conditions.

Deptford Babies' Hospital.

An appeal is being made on behalf of this hospital of 20 beds maintained by voluntary workers in a densely populated and poor district. It is wholly inadequate to the need, and money is urgently required to enable the work to continue, but a larger modern building is demanded by the situation. The hospital is housed in two ancient cottages one of which is said to have been occupied by Nelson. The kitchen is entered by the door of a ship's cabin, and the street door is secured by a portion of a chain from the *Victory*.

Visits of Hospital Governors.

The governors of Cameron Hospital, West Hartlepool, have adopted a plan for regularising their visits to the wards. A rota is to be prepared of those governors who wish to act as official visitors, divided into 12 groups. Governors so appointed will be entitled to visit the hospital officially once during their month, and they will be accompanied on their tour by the matron, the secretary, or the sister-in-charge.

Wingfield Orthopædic Hospital.

Sir William Morris has given £47,000 for the rebuilding of this hospital, at Headington, near Oxford. The existing buildings consist of war-time huts, and it had been proposed to erect four open-air wards of 20 beds each, at a cost of £12,000. The hospital and its clinics are conducted by the Berks, Bucks, and Oxon Association for the cure of cripples, and there are 130 beds and three private wards. The last annual report stated that the number of patients had increased by 20 per cent. and the new patients attending the clinic by over 30 per cent. Sir William Morris's gifts to hospitals now exceed £364,000.

Medical Fees in Accident Cases.

The County Councils Association has had a letter from the Minister of Health about proposals made to him by the British Medical Association for the payment of doctors' fees for attendance on road accidents. The secretary has reported that the following resolution was passed by the association in 1925: "That, where necessary, members of police forces should be authorised to summon medical assistance in cases of emergency, such as accidents or sudden illness in the street, and that the doctor's fee for such attendance (but not for any subsequent attendance) should, if not obtainable by him from the person attended, be paid by the police authority, and be a charge upon the police fund." The County Councils Association has now decided that, while appreciating the circumstances to which its attention has been drawn by the Minister of Health, it is strongly opposed to the assumption by county councils of any responsibility, otherwise than as is stated in the foregoing resolution, for payments to doctors in respect of services rendered by them in connexion with road accidents.

Proposed English Hospital Sweepstakes.

Sir Gordon Campbell, chairman of St. Bartholomew's Hospital Appeal Committee, and a number of his friends have prepared for consideration a concrete, though tentative, plan to benefit hospitals. "We suggest," they say, "that there should be one or more sweepstakes each year for the benefit of the hospitals; that 33 per cent. of the gross takings should be available for the hospitals concerned, and that expenses should be limited to clerical staff and the printing and distribution of particulars and tickets. On the question of conducting a sweepstake on these lines outside this country, in the event of the necessary legislation here being unobtainable, our views are that, considering the large number of our countrymen who reside on or are visiting the Continent, there should be no insurmountable difficulty in such a sweepstake being organised and conducted on the Continent by a responsible committee resident over there." In order to test opinion, Sir Gordon and his friends are considering the advisability of issuing a questionaire on the subject to the supporters of St. Bartholomew's.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

HOME-GROWN FRUIT.

IN the House of Commons on Wednesday, Nov. 19th, Viscount ELMLEY moved :—

"That this House deplores the present condition of the fruit-growing industry and the heavy losses incurred this year by growers, and calls upon His Majesty's Government to put into effect schemes which, without penalising the consuming public, will secure to the grower an economic return for his crop."

He said that a great deal of jam was being sold to-day as fresh jam which was made from preserved fruit, and that meant that people were not getting what they contracted to buy. He and many others were very uneasy about the public eating jam which had been preserved in sulphur dioxide for two years. Those who had seen this pulped fruit preserved with sulphur dioxide would agree with him that it was most unpleasant looking stuff. He realised that it was not possible for the Minister of Agriculture to send a commission to every country to inquire as to the conditions under which this stuff was made, but he asked the Minister to state the amount of sulphur dioxide which was allowed in fruit.

Mr. DE ROTHSCHILD, in seconding the motion, said it was certainly not right that children—and it was children who consumed most of the jam—should be fed on jam made from stale pulp preserved with SO_2. He urged the Minister of Agriculture to confer with the Minister of Health on this matter in the interests of public health.

JAM MADE FROM PRESERVED PULP.

Dr. ADDISON (Minister of Agriculture) said that he remembered that as a child he was given brimstone and treacle. After all this pulp preserved with SO_2 was brimstone and treacle in a diluted form. The Government could not insist upon the marking of this stuff because quite inadvertently they were prevented by the Merchandise Marks Act from insisting upon a description of such an imported article which underwent a material change after it reached this country. This fruit pulp preserved in SO_2 was boiled down and made into jam, and it was held that thus it had undergone an important change and was sold as home-made jam. It was home-made jam, but not made from British fruit. He hoped it might be possible in a friendly way to negotiate some verbal alterations of the Act which would enable the Government to deal with this difficulty. He thought that the way to help the fruit industry was on the lines of improved organisation, especially in the direction of the small producer.

Dr. FORGAN said he was glad that the Minister of Agriculture hoped to put an end to the use of foreign preserved pulp for jam-making in this country. It was contradictory that they should prevent children from drinking cream containing SO_2 while they allowed them to eat jam containing the same preservative. It might be well to hold an inquiry into the matter as well as into the sale of graded jam in this country. It might be that the dioxide in the pulp was changed in some way when the fruit was made into jam, but chemical analyses of numerous samples of jam had revealed the interesting fact that the chemical composition of the sugar in the jam was so altered that the food value was reduced almost to vanishing-point, and some jams made with pulp were actually harmful to the digestive organs. Either the Ministry of Agriculture or the Ministry of Health ought to investigate this subject. That debate had been concerned primarily with the interests of the producers, but he thought that the consumers' interests ought also to be considered. There had been a slogan for some time past of "Eat more fruit," but speaking as a medical man he found that the doctor had not been kept away from the homes of the people, because not nearly enough fruit yet was consumed, and one reason for that was that although the producers were not getting a fair price for their produce the prices to the consumer were, in many cases, unnecessarily high. If they could help the producer and at the same time reduce the price of fruit they would be contributing very materially to an improvement in the health of the people, particularly in regard to dentition, which was a disgrace to this country.

The motion was agreed to without a division.

MOTORISTS AND THIRD-PARTY INSURANCE.

On Tuesday, Nov. 25th, Mr. REMER asked leave to introduce the Road Traffic Act 1930 (Amendment) Bill, a measure to compel insurance companies to issue third-party insurance certificates to motor drivers having no convictions for careless, reckless, or dangerous driving against them. He said that insurance companies were very largely refusing to issue insurance certificates to people who had previously insured with them, the reason given being that those persons had a bad insurance record. The effect of this was to give insurance companies the power to say whether a person should drive a car or not, as the Road Traffic Act made it a condition of the issue of a driving licence that the applicant should be insured against third-party risks. He contended that the decision as to whether a person was to drive a car or not should not be left to the discretion of insurance companies.

Mr. C. WILLIAMS opposed the Bill. He said that although it would compel insurance companies to issue certificates for third-party insurance to certain people, it did not state the terms on which they should do so. This would mean that those insurances would only be granted at prohibitive rates, which was a contradiction of the terms of the Bill.

Leave was granted to introduce the Bill by 244 votes to 100, and the Bill was brought in and read a first time.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 19TH.

Maternal Mortality.

Mr. RHYS DAVIES asked the Minister of Health whether the rate of maternal mortality differed as between women insured under the national health insurance scheme and those outside its scope; and, if so, what was the difference in percentages.—Mr. GREENWOOD replied: I regret that no statistics are available on this subject.

Suicides in Great Britain.

Mr. KINLEY asked the Home Secretary the numbers of suicides in Great Britain for each of the past ten years to the latest date.—Mr. SHORT replied: The numbers of suicides in England and Wales have been as follows:—1920, 3373; 1921, 3715; 1922, 3844; 1923, 3919; 1924, 3679; 1925, 4054; 1926, 4408; 1927, 4863; 1928, 4846; 1929 (provisional figures), 4907. I have no information as to Scotland, and any question should be addressed to the Secretary of State for Scotland.

THURSDAY, NOV. 20TH.

White Lead Poisoning.

Mr. GRAHAM WHITE asked the Home Secretary the number of cases of lead poisoning notified, and the number of deaths since the imposition of the new regulations dealing with the use of white lead.—Mr. SHORT replied: The regulations under the Lead Paint Act came into force on Oct. 1st, 1927. During 1928, 87 cases were reported, including 20 deaths; during 1929, there were 75 cases, including 10 deaths; and during the nine months ending Sept. 30th last, there were 43 cases, including 9 deaths.

Mr. WHITE: Could the hon. gentleman say whether he is satisfied that these regulations are sufficient to meet the needs of the case?

Mr. SHORT: I may say that they are constantly under review, having regard to the facts on cases that are brought to our notice.

Erskine House Hospital.

Mr. NEIL MACLEAN asked the Minister of Pensions the maximum accommodation at Erskine House and the number of limbless ex-Service men treated there during 1925, 1926, 1927, 1928, and 1929 respectively.—Mr. ROBERTS replied: The present number of beds at Erskine House available for Ministry of Pensions cases is 63. During the years 1925–1929 limbless and other surgical cases were treated in the Ministry of Pensions surgical centre at Bellahouston, which will shortly be transferred, under the present surgical control, to Erskine House.

Manufacture and Sale of Absinthe.

Major OWEN asked the Home Secretary whether he was prepared to introduce legislation forbidding the manufacture, sale, and use of absinthe in this country.—Mr. SHORT (Under-Secretary, Home Office) replied: No, Sir.

Major OWEN: Is the hon. gentleman aware that legislation has been passed already in France, Belgium, Switzerland and Germany forbidding the sale and manufacture of this drink, and is this country going to lag behind these other countries in this matter?

Mr. SHORT: I am aware of the facts stated by my hon. friend, but so far as I am aware there is no ground on which to take the action he suggests.

Supply of Milk to School Children.

Dr. HASTINGS asked the President of the Board of Education if he could give the relative proportions in which certified, grade A (T.T.), pasteurised, and ordinary undesignated milk were supplied to children in elementary schools.—Sir CHARLES TREVELYAN replied: I regret that I am unable to give this information. In approving arrangements for the provision of milk by local education authorities the Board call the attention of the authority to the importance of their satisfying themselves as to the purity and quality of the milk, but they have no information as to the relative proportions in which the different grades of milk are supplied.

Tuberculosis on Tyneside.

Mr. EDE asked the Minister of Health if he had received a report from his representative who recently investigated the prevalence of tuberculosis in the county borough of South Shields; if so, what action he proposed taking; and if he would consider at an early date calling a conference of the authorities for dealing with tuberculosis on the Tyneside, with a view to securing the inauguration of a centralised and comprehensive scheme at the earliest possible moment.—Mr. GREENWOOD replied: The answer to the first part of the question is in the affirmative. I have already communicated with the town council and have made certain suggestions for increasing the hospital provision available for the treatment of this disease in South Shields. As regards the last part of the question, if the local authorities concerned consider that a conference would be desirable, I shall be glad to do anything in my power to facilitate it.

Mr. EDE: May I take it that the right hon. gentleman would be willing to call such a conference if requested and arrange for one of his officers to attend?

Mr. GREENWOOD: Oh, most certainly.

Drug Advertisements in Medical Papers.

Mr. FREEMAN asked the Minister of Health whether he would consider the desirability of amending the Medical Act of 1886 with a view to controlling advertisements of drugs in medical papers.—Mr. GREENWOOD replied: I am not aware that there is any ground for proposing to extend the control which I understand is already exercised over advertisements of this character by the proprietors of the medical journals concerned.

Treatment in Mental Hospitals.

Mr. KINLEY asked the Minister of Health whether the treatment of patients in public mental hospitals was laid down by the Board of Control or whether the medical officer in charge had full or partial liberty in matters of treatment.—Mr. GREENWOOD replied: The answer to the first question is in the negative and to the second that the method of treatment of patients is within the discretion of the medical officer of an institution.

Dissection of Paupers' Bodies.

Mr. DAY asked the Minister of Health whether his attention had been drawn to the fact that the public assistance committees of several counties had decided that in future bodies of friendless paupers were to be available for dissection at medical schools; whether any regulations existed by which a friendless pauper, who was dying in a hospital, was notified of the fact that his body would be handed over for the purpose of dissection unless he protested; and were any arrangements made by the authorities to satisfy themselves that when the dissected body was buried the correct remains of the body were properly interred.—Mr. GREENWOOD replied: The answer to the first and third parts of the question is in the affirmative. As regards the second part, any inmate of an institution may express a desire that his body shall be interred without anatomical examination, and Section 7 of the Anatomy Act, 1832, provides that such a wish shall be respected.

Closing of Bellahouston Pensions Hospital.

Mr. NEIL MACLEAN asked the Minister of Pensions (1) when the Ministry of Pensions first received intimation from the Glasgow Corporation to remove from Bellahouston where suitable alternative accommodation was looked for; and why such alternative accommodation was refused and Erskine House selected; and (2) whether he was aware of the dissatisfaction among ex-Service men in Glasgow at the publication of his decision to have ex-Service patients requiring indoor treatment removed to Erskine House from January, 1931; and whether he would reconsider his decision.—Mr. ROBERTS replied: Repeated intimations have been received from the Glasgow Corporation that the site of the hospital is required for civic purposes, and, though they generously extended the department's occupation on several occasions, I have, as already stated, now decided that existing requirements do not justify further occupation of the site beyond January next. After careful consideration I have come to the conclusion that Erskine House is entirely suitable as alternative accommodation for the treatment of ex-Service men in the West of Scotland, and I am unaware of any ground for altering this decision.

TUESDAY, NOV. 25TH.

Education of Mentally Defective Children.

Major CHURCH asked the President of the Board of Education if local education authorities compiled complete records of the careers of children after leaving school who had been segregated for education purposes in schools for the mentally defective.—Mr. MORGAN JONES (Parliamentary Secretary to the Board of Education) replied: The Board urge all local education authorities which provide schools for mentally defective children to compile records of the after-careers of children who have left, so far as they are able, and nearly all authorities do so; but they are not in a position to ensure that these records shall be complete. An analysis of the records for seven areas will be found in paragraph 88 of the Report of the Board's Chief Medical Officer for 1925.

Imports of Cream.

Brigadier-General CLIFTON BROWN asked the President of the Board of Trade how much unsterilised cream had been imported into this country since Jan. 1st, 1930, and from what countries it came.—Mr. W. GRAHAM replied: During the ten months ended Oct. 31st, 1930, the total quantity of cream imported into this country amounted to 116,733 cwts. of which nearly 99 per cent. was consigned from the Irish Free State, Denmark, the Netherlands, and Switzerland. I am unable to state what proportion of this cream was unsterilised.

Experiments with Poison Gas.

Mr. SINKINSON asked the Secretary for War how many soldiers were being experimented upon by being gassed at Porton; and what was the extra allowance in pay given for having gas tried upon them.—Mr. T. SHAW replied: No soldiers are "gassed" at Porton in the ordinary sense of the word. But volunteers, averaging some six a week, undergo tests with the object of proving the efficacy of preventive and curative treatment for skin burns and of confirming the adequacy of the protection afforded by respirators. The volunteers receive extra leave, and in certain cases pay of 1s. or 6d. for each test.

Mr. TURNER asked the Secretary for War whether any of the experiments undertaken under the direction of the Chemical Warfare Committee had reference to the offensive possibilities of poisonous or asphyxiating gases in warfare.—Mr. T. SHAW replied: The research and experiments now being conducted have solely defensive measures in view.

Physical Condition of Army Recruits.

Major GLYN asked the Secretary for War if he would furnish a return showing the general average physical condition of recruits at all the Army depôts, Royal Engineers, Royal Artillery, cavalry, foot guards, infantry of the line, tank corps, and departmental services on joining the Service, with any notes the Director-General of Army Medical Services might care to make as to the usual disabilities and defects that were most noticeable, and indicating the physical development of these men after three and six months' training at the depôts and with their units.—

Mr. T. SHAW replied: The standard of physical fitness required of recruits for enlistment in the Army is laid down in the instructions for the physical examination of recruits. For the recruiting year 1928–29, which is the latest period for which information is yet available, the main disabilities leading to the discharge of recruits were: disease of the middle ear; defects of lower extremities; disease of heart; and defective vision. An investigation which is at present being carried out in the London area appears to show that the general physical standard of the recruits actually accepted in that area is, if anything, higher than that of recruits accepted before the war. I am further informed by the Army medical authorities that the physical development of recruits during their first six months o training is most satisfactory, and that weight is put on at the depôts to the average of 6¼ lb. Figures are not available as to the weight increase after three months' training, but both the general physical development and increase in weight are steadily and evenly progressive.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Dec. 2nd.—8 P.M., PATHOLOGY. Laboratory Meeting at the Imperial Cancer Research Fund Laboratories, Queen-square, W.C. 8.30 P.M., ORTHOPÆDICS. Paper: Dr. L. Böhler (Vienna): The Treatment of Fractures of the Upper Extremity. A discussion will follow.

WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Discussion: The Relation of the Teaching of the History of Medicine and that of Clinical Teaching. Opener: Dr. W. R. Bett: Clio by the Bedside. MEDICINE. Members of this Section are specially invited to attend and take part in the discussion. 8.30 P.M., SURGERY. Discussion: Surgery in Diabetes. Openers: Prof. G. E. Gask, Dr. George Graham, and Dr. Lawrence. Followed by Mr. C. A. R. Nitch and others. MEDICINE. Members of this Section are specially invited to attend and take part in the discussion.

THURSDAY.—8 P.M., TROPICAL DISEASES. Presidential Address by Dr. J. Gordon Thomson.

FRIDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Discussion on Intracranial Complications of Otitic Origin: Neurological and Pathological Investigation. Papers by Dr. George Riddoch and Dr. A. B. Rosher. Discussion on the Committee's Report on Hearing Tests. 5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Demonstrations of cases illustrating Plastic Repair after Operations on the Upper Jaw by Mr. Musgrave Woodman, and illustrating Repair after Operations on the Pharynx by Mr. Lionel Colledge. A short demonstration will be given by Dr. Arthur F. Hurst of A Method of Treatment in Asthma and Hay-fever. 8.30 P.M., ANÆSTHETICS. Cinematographic demonstration by Prof. F. T. G. Hobday on his anæsthetic apparatus and the administration of anæsthetics in veterinary surgery. Cases will be shown.

BRITISH INSTITUTE OF RADIOLOGY AND RONTGEN SOCIETY,

WEDNESDAY, Dec. 3rd.—2.30 P.M. (at the Central Hall, Westminster), official opening of Exhibition by Sir Humphry Rolleston. 3.30 P.M., Presidential address by Mr. C. E. S. Phillips, F.Inst.P.

THURSDAY.—10.30 A.M. to 12.30 P.M., Technical papers. 5 P.M., Prof. G. P. Thomson, F.R.S.: Some Recent Experiments on Cathode Rays (Mackenzie Davidson lecture).

FRIDAY.—10.30 A.M., Medical papers. Dr. H. A. Harris: The Growth of Bone as illustrated by Radiography. Dr. Donald Hunter: Changes in the Bones in Hyperparathyroidism and Hyperthyroidism. 4.30 P.M., Dr. A. E. Barclay: The Danger of Specialisation (Silvanus Thompson lecture).

SOCIETY OF CHEMICAL INDUSTRY (London Section).

MONDAY, Dec. 1st.—8 P.M. (in the Rooms of the Chemical Society, Burlington House, W.), Mr. J. H. Coste, D.Sc.: Analytical Chemistry, its Past History and Future Development.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, Dec. 1st.—8 P.M., Prof. C. R. Darling, F.I.C.: Modern Domestic Scientific Appliances, Heating of Rooms, and Hot Water Supply.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Dec. 5th.—8 P.M. (at the De Vere Hotel, Kensington High-street), Dinner, followed by discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Dec. 1st, and following WEDNESDAY and FRIDAY.—4 P.M., Mr. F. W. Twort: Diseases of Bacteria. (Free lectures.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Dec. 1st to SATURDAY, Dec. 6th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon. at 4 P.M., free lecture by Mr. W. H. Ogilvie on Recent Advances in Surgery. Tues., at 10, Bedford-square, W.C. Special M.R.C.P. Lecture at 8.30 P.M., by Dr. Knyvett Gordon: The Diagnosis of Diseases of the Blood-forming Organs. Followed by a laboratory demonstration.—KING'S COLLEGE HOSPITAL, Denmark-hill, S.E. Thur., at 2 P.M., free demonstration by Dr. Terence East (Cardiol).—WESTERN OPHTHALMIC HOSPITAL, Marylebone-road, N.W. Thur., at 2 P.M., free demonstration in Out-patient Department by Mr. T. C. Summers.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. Special course in neurology at 5 P.M. daily.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Afternoon course.—THE INFANTS HOSPITAL, Vincent-square, S.W. Special afternoon course.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Dec. 1st.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Dec. 1st.—10 A.M. to 1 P.M., Surgical Wards, Genito-Urinary Operations, Skin Department. 2 P.M., Operations, Surgical Wards, Medical, Surgical, Eye and Gynæcological Out-patients.

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Clinical Demonstration (Surgical), Dental Department. 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

WEDNESDAY.—10 A.M. to 1 P.M., Medical and Surgical Wards, Children's Medical Out-patients. 2 P.M., Gynæcological and General Operations, Medical, Surgical, and Eye Out-patients.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Demonstration of Fractures. 2 P.M., Operations, Medical, Surgical, and Genito-Urinary Out-patients.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Department, Dental Department, Clinical Demonstration (Medical). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

SATURDAY.—10 A.M. to 1 P.M., Throat Operations, Bacterial Therapy Department, Medical Wards, Children's Medical and Surgical Out-patients.

KING'S COLLEGE, Strand, W.C.

THURSDAY, Dec. 4th.—5 P.M., Mr. W. Robson, D.Sc.: Protein Metabolism. (Last lecture.)

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Dec. 4th.—9 P.M., Dr. Sydney Thomson: Treatment of Syphilis.

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Dec. 1st.—4.15 P.M., Dr. Charles Singer: Fourth Centenary of the Invention of the Word "Syphilis." 5 P.M., Mr. L. E. Bayliss, Ph.D.: Respiratory Functions of the Blood. (Last lecture.)

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

THURSDAY, Dec. 4th.—5 P.M., Dr. McKim McCullagh: Treatment of Obstructed Labour.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

THURSDAY, Dec. 4th.—4 P.M., Dr. Worster-Drought: Recent Advances in Diagnosis and Treatment of the Nervous System.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Dec. 3rd.—4.30 P.M., Mr. C. H. Mills: Some Interesting Urological Cases.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Dec. 5th.—4 P.M., Mr. N. Asherson: Chronic Otorrhœa.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

MONDAY, Dec. 1st.—2.15 P.M., Mr. Frederick Roques: The First Stage of Labour.

TUESDAY.—2.15 P.M., Mr. C. S. Lane Roberts: Some Minor Gynæcological Ailments. 3.15 P.M., Mr. A. M. Zamora: Indications for Operative Interference in Ear Disease.

WEDNESDAY.—2.15 P.M., Dr. Bernard E. Schlesinger: Demonstration of Cases in Children's Ward. 3.15 P.M., Dr. H. C. Semon: Modern Views on the Nature and Treatment of Eczema.

THURSDAY.—2.15 P.M., Mr. E. Wolff: Cataract. 3.15 P.M., Dr. P. O. Ellison: The Cerebro-Spinal Fluid.

FRIDAY.—2.15 P.M., Mr. W. B. Gabriel: Obstructive Jaundice. 3.15 P.M., Dr. C. Gouldesbrough: Radiology of Gall-bladder and Urinary Tract.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Dec. 2nd.—5 P.M., Dr. A. C. Roxburgh: Cutaneous Syphilis (1).

THURSDAY.—5 P.M., Dr. A. C. Roxburgh: Cutaneous Syphilis (2).

ST. JOHN'S HOSPITAL, Morden Hill, Lewisham.

MONDAY, Dec. 1st.—4.30 P.M., Dr. John Gibbens: Joint Diseases in Children.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Dec. 3rd.—4 P.M., Prof. D. B. Blacklock: Prevention of Disorders in Tropical Countries.

THURSDAY.—4 P.M., Mr. F. J. McCann: Medical Arguments Against Contraception.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Dec. 3rd.—3.30 P.M., Dr. V. Zachary Cope: Causation and Prevention of Appendicitis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Dec. 2nd.—4.15 P.M., Mr. H. H. Rayner: Diagnostic Value of Recent Advances in X Ray Examination of the Urinary and Biliary Tract.
FRIDAY.—4.15 P.M., Dr. W. Blair: Mental Exhaustion.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.
FRIDAY, Dec. 5th.—3.30 P.M. (at the Royal Infirmary), Dr. J. H. Cobb: Syphilitic Infections of the Nose and Throat.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Dec. 4th.—11 A.M., Dr. N. Kletz: Clinical Demonstration. 4.15 P.M., Dr. A. Renshaw: Systematic Pathological Investigation of a Case of Rheumatoid Arthritis.

Appointments

BOYD, J. LINDSAY, M.D. Glasg., F.R.C.P. Edin., has been appointed Assistant Honorary Physician to the North Staffordshire Royal Infirmary.
FRY, R. M., L.R.C.P. Lond., M.R.C.S., Assistant Director of the Research Laboratory, Queen Charlotte's Maternity Hospital.
GOLDBERG, I., M.B., Ch.B. Edin., House Surgeon, Hampstead General and North-West London Hospital.
MACKAY, I. C., M.B., Ch.B. Edin., D.P.H., Deputy Medical Officer of Health for Cheshire.
MCCREDIE, P. A., M.B., Ch. B. Edin., Medical Referee under the Workmen's Compensation Act for Wigtown County.
WILLIAMS, G., M.B., Ch.B. Liverp., Medical Officer, Trawsfynydd, Merioneth.
Richmond, Whitworth, and Hardwicke Hospitals: ABRAHAMSON, L., M.D., B.Ch. Dub., and O'CONNOR, J., M.D., B.Ch.N.U.I., Honorary Physicians.

Vacancies

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.
Belfast, Joint Nursing and Midwives' Council for Northern Ireland. Examiners of Midwives.
Birkenhead General Hospital.—Sen. H.S. £150.
Birmingham Ear and Throat Hospital, Edmund-street.—Res. H.S. £150.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
Bury St. Edmunds, West Suffolk General Hospital.—Jun. Res. M.O. £150.
Cardiff Royal Infirmary.—Two Hon. Surgeons.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Asst. to Out-patient Dept.
Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.
Cheshire Joint Sanatorium, Market Drayton, Salop.—H.P. £250.
Chester Royal Infirmary.—H.S. £150.
Downpatrick, N. Ireland, Down Mental Hospital.—Jun. Asst. M.O. £300.
Dreadnought Hosp. Greenwich.—H.P. and H.S. At rate of £110.
Dublin, Dr. Steeven's Hospital.—Res. Surg. Also Res. Asst. Surg.
Dunedin, New Zealand, Otago University.—Prof. of Midwifery and Gynæcology. £2000.
Dunfermline, West Fife Infectious Diseases Joint Hospital.—Asst. M.O. £400.
Exeter, Royal Devon and Exeter Hospital, Pathological Department.—Pathologist. £500.
Glasgow Corporation, P.H. Dept.—Deputy M.O. for Mental Services. £1000.
Hampshire County Council.—Asst. County M.O. £600.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.P. and H.S. Each at rate of £100.
Harrogate Infirmary.—Res. Sen. and Jun. H.S.'s. At rate of £150 and £125 respectively. Also Res. H.P. At rate of £150.
Huddersfield Royal Infirmary.—H.S. At rate of £150.
Hull Royal Infirmary, Sutton Branch.—H.P. At rate of £160.
Leeds, Killingbeck Tuberculosis Sanatorium.—Asst. Res. M.O. £250.
Lincolnshire (Kesteven) C.C.—Asst. County M.O.H. £500.
Liverpool, Royal Children's Hospital.—Res. H.P. At rate of £100.
Liverpool, Royal Southern Hospital.—Hon. Dental Surgeon.
Liverpool University.—Jun. Lecturer in Dept. of Pathology, £300.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.
London Temperance Hospital, Hampstead-road, N.W.—Cas. O. Also H.P. At rate of £120 and £100 respectively.
Lowestoft, St. Luke's Hospital.—Jun. Asst. M.O. £500.
Manchester, Ancoats Hospital.—H.S. for General Surgery, &c. At rate of £100. Also Med. and Surg. Registrars. Each £100. Also Orthopædic Reg. (part-time). £25.
Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Sen. Res. M.O. At rate of £125.
Manchester City, Abergele Sanatorium.—Med. Supt. £900.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Asst. Cas. O. At rate of £125.
Miller General Hospital, Greenwich-road, S.E.—H.P. and H.S. Each at rate of £125. Also Out-patient Officer. At rate of £150.
Monmouthshire County Council.—Two Asst. M.O.'s. Each £500.
National Hospital, Queen-square.—H.P. £150.
Newcastle-upon-Tyne, Hospital for Sick Children.—Res. H.P. Also Jun. H.S. Each at rate of £100.
New Zealand, Hawkes Bay Hospital, Napier.—Pathologist. £750.
Nottingham City Infirmary, Hucknall-road.—Two M.O.'s. Each £350.
Oswestry, Shropshire Orthopædic Hospital.—Asst. Orthopædic Surgeon. £450.
Plymouth Central Hospital.—H.S. At rate of £120.
Pontefract General Infirmary.—H.S. £150.
Preston, Sharoe Green Hospital, Fulwood.—Jun. Res. M.O. At rate of £104.
Prince of Wales's General Hospital, N.—Hon. Clin. Assts. to Various Departments.
Queen Mary's Hospital for the East End, Stratford, E.—Res. M.O., H.S.'s, H.P.'s, &c. At rate of £200, £150, and £120 respectively. Also Anæsthetist to Dental Dept. £25.
Queen's Hospital for Children, Hackney-road, E.—H.P. and H.S. Each at rate of £100.
Royal National Orthopædic Hospital, Great Portland-street, W.—Hon. Asst. Surg.
St. Leonards-on-Sea, Buchanan Hospital.—Jun. H.S. £125.
St. Mary's Hospital, W.—Surgical Registrar. £200.
St. Thomas's Hospital.—Chief Asst. in Physico-therapy Dept. £250.
Salford Royal Hospital.—Res. Surg. O. At rate of £200. Also H.P., Two H.S.'s, and Cas. H.S. Each at rate of £125.
Salisbury, General Infirmary.—H.S. £150.
Sheffield, City of.—Asst. Tuber. Officer. £500.
Sheffield Royal Hospital.—Ophth. H.S. Also Res. Anæsthetist. Each at rate of £80.
Sheffield Royal Infirmary.—Ophth. H.S. £80–£100. Also Clin. Asst. to Ear, Nose, and Throat Dept. £300.
Somerset County Council, Sandhill Park, Bishop's Lydeard, nr. Taunton.—Med. Supt. £850.
South Shields, Harton Hospital.—Two H.S.'s. Each £120.
Staffordshire County Council.—Asst. Bact. and Path. £600.
Tilbury Hospital, Essex.—H.S. At rate of £150.
West London Hospital, Hammersmith-road, W.—Non-Res. Cas. O. £250. Also H.P., H.S., and Aural and Ophth. H.S. Each at rate of £100.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Surg. Reg.
Wigan Royal Infirmary.—Res. M. and Surg. O. and Reg. £250.
Windsor, King Edward VII. Hospital.—H.S. At rate of £100.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. At rate of £100. Also Part-time Pathologist. £300.
Worcester General Infirmary.—Jun. Res. M.O. £120.
Wrexham and East Denbighshire War Memorial Hospital.—Hon. Surgeon to Ear, Nose, and Throat Dept.
York Dispensary.—Res. M.O. £150.

Births, Marriages, and Deaths

BIRTHS.

INKSTER.—On Nov. 15th, at Middlesbrough, to Olive Mary, the wife of John Inkster, M.D. Aberd., M.R.C.P. Lond.—a daughter.
JOULES.—On Nov. 21st, at South Hill Nursing Home, Mary, the wife of Horace Joules, M.D., M.R.C.P., The Hospital, Selly Oak, Birmingham, of a son.

MARRIAGES.

COPEMAN—BOURNE.—On Nov. 15th, at St. Albans Cathedral, William Sydney Charles Copeman, M.B., M.R.C.P., to Helen, youngest daughter of the late W. W. Bourne, Esq., and Mrs. Bourne, of Garston Manor, Herts.

DEATHS.

LOCKET.—On Nov. 18th, at his residence, New Holme, Bratton, Wilts., Thomas Wood Locket, M.D., M.R.C.S.
MAINGAY.—On Nov. 17th, at a nursing home, Henry Bertram Maingay, F.R.C.S., of Queen-street, Scarborough, aged 63.
SCHARLIEB.—On Nov. 21st, at the residence of her son, Dr. Herbert Shirley, York-terrace, Regent's Park, Mary Scharlieb, Dame of the British Empire, M.D., M.S. Lond., LL.D. Edin., J.P., aged 85.
SNOW.—On Nov. 20th, suddenly, at St. Leonards-on-Sea, Herbert Snow, M.D., late Senior Surgeon and Consultant, Cancer Hospital, London.
STEEL.—On Nov. 21st, at Abergavenny, Colonel William Dyne Steel, D.L., J.P., V.D., M.D., aged 75.
WALLACE.—On Nov. 18th, at Woking, Robert William Lessel Wallace, M.C., M.D. Edin., aged 49.
WILSON.—On Nov. 21st, in a London nursing home, Dr. Ralph W. Wilson, M.D., of The Moorings, Kew Gardens.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE annual congress and exhibition of the British Institute of Radiology, incorporated with the Rontgen Society, will be opened by Sir Humphry Rolleston at the Central Hall, Westminster, at 2.30 P.M. next Wednesday, Dec. 3rd. Mr. C. E. S. Phillips will give the presidential address. The Mackenzie Davidson lecture will be delivered by Prof. G. P. Thomson, F.R.S., on Thursday at 5 P.M., and the Silvanus Thomson lecture by Dr. A. E. Barclay on Friday at 4.30. Further details will be found in our Medical Diary.

NOTES, COMMENTS, AND ABSTRACTS

WAKENING OF HOSPITAL PATIENTS.

THE Central Public Health Committee of the London County Council has inquired into a suggestion that hospital patients should not be awakened before 6 o'clock in the morning. Under the late boards of guardians the times of wakening patients at the 28 general hospitals varied considerably. At ten of them patients were wakened at or before 5 A.M., at nine the times of wakening began at 5 A.M. or later, and proceeded by degrees, extending in one case to as late as 7.30 A.M., and at the remaining nine the time for wakening did not begin until 6 A.M. These arrangements have so far been continued. The Committee says:—

"It will be appreciated from the answers to the questionaire issued by the Central Bureau of Hospital Information [1] that informed opinion is by no means unanimous on the principle of allowing patients to sleep until 7 A.M., apart from purely staff considerations. Nor can local conditions be ignored. In London, the cases of Middlesex and Guy's Hospitals are illustrative. At the former, situated in the West Central district of London, external traffic conditions with resultant noise continue until late at night and recommence at a relatively late hour in the morning. At Guy's Hospital, in close proximity to Borough Market, traffic begins at a very early hour and ceases relatively early at night. The wards at Guy's Hospital close down at 8 P.M. and reopen at 6 A.M. At the Warneford, Leamington and South Warwickshire General Hospital the routine awakening of patients at 5 A.M. was altered for a month or two as an experiment, and breakfasts were served at 7 A.M. and after a time at 8 A.M. Objections were taken to the new arrangements on the ground that too long a period elapsed since the previous meal of the evening before, and that it was not possible in the shorter time available to clean and prepare the wards. With the agreement of the majority of nurses and patients the former routine was reverted to.

"Evidence shows, therefore, that there can be no hard-and-fast rule. . . . Generally speaking, there must be a time for a particularly important duty to which other considerations must conform. This may be taken as the time at which the medical staff commence their rounds, after the patients have breakfasted and have been prepared for the day, in order to finish the rounds before the patients' dinner-time. This time is usually in the neighbourhood of 10 A.M. The time necessary to prepare patients and wards for the medical officers' visits is governed by the staff available. In turn, the times of awakening regulate the times for closing down, in order to ensure that the patients have sufficient rest. In the case of the Council's hospitals the patients are only disturbed in exceptional cases after 8 P.M., and nine to ten hours are therefore available for rest."

The Committee proposes that, as far as practicable, no patient should be awakened, except in special circumstances, before 6 A.M., and that those hospitals which are below this standard should be raised up to the standard as and when staff are available.

INFRA-RED IRRADIATION.

RADIANT heat is frequently prescribed and has proved valuable in the treatment of various and dissimilar clinical conditions. It is more than probable that these conditions are not all benefited to the maximum extent by exposure to identical regions of the spectrum. Differences in the permeability of the tissues to various rays and differences in the depth of the lesions—to mention two obvious factors only—make it essential to obtain apparatus whose emission is known and whose output can be controlled.

The Beaumont-Mason infra-red generator made by Messrs. Mason (Electro-Medical), Ltd., 96, Wigmore-street, London, W., consists of five graphite elements mounted so as to allow of flexibility and ready adjustment in any position. Each element carries its own electrical component and is provided with a pilot lamp. Graphite was chosen for the elements because it is said to have the highest emission factor of all the materials tested for that purpose. Infra-red rays are produced by heating the elements to the desired extent and the patient's skin can be cooled during treatment by the use of an electric fan. The absence of an admixture of visible rays and the absence of loss of radiation by filtering through coloured glass are notable points in this apparatus.

In the Sollux lamp (British Hanovia Quartz Lamp Co., Ltd., Slough), use is made of both visible and infra-red radiation. A 1000 watt bulb is mounted in front of a large parabolic reflector and by means of focal adjustment it is possible to secure divergent, parallel, or convergent rays. The feature of interest is the presence of an adjustable resistance which controls the intensity of the luminous heat-source. The apparatus is supplied with a small conical reflector used as an extension to the large reflector for irradiation of small areas and with a filter-frame and glass filters which can be used when it is desired to exclude one part of the spectrum from the rays emitted by this lamp.

[1] See THE LANCET, 1930, i., 972.

LYMPHATIC LEUKÆMIA.

To the Editor of THE LANCET.

SIR,—I should be grateful if any of your readers could put me in touch with a case of lymphatic leukæmia for a special investigation. A case that had been under observation for a long time and yet showed symptoms would be of particular value.

I am, Sir, yours faithfully,

Guy's Hospital, S.E., Nov. 24th, 1930. E. P. POULTON.

ULCERS OF THE SKIN.

To the Editor of THE LANCET.

SIR,—I read with great interest in your issue of August 16th (p. 382) your quotation on this subject from *Archiv für Schiffs- und Tropen-Hygiene*. Leishmaniasis of the skin is a common disease in Arabia. It is usually named after the city or country where the disease exists. In Transjordania and Palestine it is called Jericho ulcer, white Aleppo button, Bagdad ulcer, Nile ulcer, and Yeman ulcer are a few of its very numerous names. While reading your quotation the idea of looking for leishmania parasites occurred to me and I rejoiced to find it confirmed by Dr. Ziemann.

The Prince Abd-alla of Transjordania developed eight ulcers on his arm a month after his return to his country from a visit last year to his brother the King of Iraq. Microscopic examination of scrapings from the edges of two of the eight ulcers showed leishmania parasites. All kinds of local treatment and intramuscular injections of Fouadin (an organic antimony compound) were without avail, until I finally succeeded in procuring an apparatus that condenses, in the form of solid snow, carbon dioxide gas under pressure from iron cylinders. Cauterising the ulcer with solid carbon dioxide reduces its nature to a simple skin ulcer that can be cured within two to three weeks, with a simple antiseptic dressing. The ointment I used was 2 per cent. pellidol (di-acetyl-amino-azotoluol).

The eight ulcers of the Prince and one ulcer on the hand (dorsal aspect) of a servant of his were cured in this simple and safe way. There is no doubt that solid carbon dioxide is the specific of leishmaniasis of the skin. There are two theories to explain the mode of action. The first is that the ulcer being a disease of hot countries, it is reasonable to treat it with excessive cold, and the temperature of solid carbon dioxide is 79° C. below zero. The second theory attributes the cure to the destruction of the leishmania parasites by the leucocytosis that follows the application of the solid gas. It is very probable that both freezing and leucocytosis coöperate in curing.

I am, Sir, yours faithfully,

Amman, Transjordania. D. F. TU-TUNJI.

ADDRESSES AND ORIGINAL ARTICLES

MATERIA MEDICA AND THE PRACTICE OF MEDICINE.*

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A distinguished teacher of mine once startled his class by asking what a tiger does when it is suffering from septicæmia. The students regarded the conundrum as merely amusing, yet the answer is of considerable importance. For the tiger, so far as we know, would differ from most human beings in having no preconceived notions as to how to deal with the situation. It would not be troubled with current theories of physiology and pathology, nor would it be handicapped by the fads and fashions of the therapeutic notions of the time. It would probably simply go and rest near a pool of water, where it could assuage its feverish thirst. It would, in fact, adhere strictly to the method of Hippocrates, relying entirely on the power indicated in the ending canon of that great physician, *νούσων φύσεις ἰητροί*, or, as it is better known in its translated and paraphrased form, "vis medicatrix naturæ."

Possibly, however, our tiger in its agony might try the effect of some plant or grass, for the apparently instinctive practice of taking drugs is believed to exist among the lower animals. It is a fascinating subject for the speculative mind to ponder how this instinct arose, and how, as primitive man struggled upwards, a belief in the power of drugs to remedy disease originated. Perhaps in the trying out of plants as foods some knowledge of their effects was obtained—purgative, emetic, carminative—and thus certain of them were set aside for medicinal purposes. It is clear at any rate that faith in drugs, especially vegetable drugs, has been deep-seated and widespread amongst all peoples from earliest times. It is as strong in modern civilisation as it was amongst primitive men.

The subject of materia medica or medicinal agents, therefore, is one of the most ancient of medical studies. It had its foundation in observation and pure empiricism, and in the beginning was really the simple practice of medicine. At first its practical application was in the hands of women, probably because women would naturally look after the sick, but later it was transferred to specialised medicine-men. Then with the development of reason came new difficulties. One great characteristic of *Homo sapiens* is that he tends instinctively to fill up the blanks in his knowledge by having recourse to conjecture and hypothesis. In one way that is a healthy instinct, for where complete and accurate knowledge is unattainable, a working hypothesis, though wrong, may be better than no hypothesis at all. But it has obvious disadvantages. Primitive man regarded everything he could not explain as being the work of some god, and when he came to reason about the cause of disease it was perhaps not unnatural that he should explain convulsions, delirium, and disease generally, on the hypothesis that the patient was possessed of a devil or evil spirit. And so, to the simples and drugs of materia medica was added exorcism or the casting out of devils. The knowledge of disease and of the means of dealing with it gradually passed into the hands of the priest-physician. Materia medica, magic, and mystery became almost synonymous terms.

Observation, Reason, and Experience.

In medicine it took an unusually long time for men to realise that to call normal phenomena natural, and abnormal divine, introduces an absurd dualism; but gradually the conception of the divine origin of disease was discarded, to be replaced by something perhaps even worse—philosophical theory. For the Greek philosophers in their desire to frame a comprehensive theory of disease shut their eyes to fact, and with their *ὑποθέσεις* or postulates sought to explain medical phenomena by *a priori* assumptions. They wove theories of pathology without putting them to the test of experience, and on these erroneous theories was perforce based irrational treatment

In the midst of this confusion of mystery and speculation there arose the "Father of Medicine," Hippocrates, of whom it was said by Celsus that he achieved the feat of separating medicine from philosophy. He saw that actual experience and study of disease were of far greater importance than philosophical interpretations based solely on figments of the imagination, and though his conceptions of pathology were often quite erroneous, he taught the necessity of understanding the natural history of disease. He observed that though drugs were usually given to patients, recovery sometimes took place where no drug had been administered; and he deduced from that the existence of a natural spontaneous healing power within the living organism, that power of which I have already spoken—vis medicatrix naturæ. The first great step in scientific medicine, therefore, not only involved a doubt about the curative results of empirical methods of treatment, but also made an appeal to the natural laws of living organisms to effect the cure of the sick. It would be well if every student and practitioner of medicine kept that thought in the forefront of his mind. It would save him from drawing many erroneous conclusions from his therapeutic observations. Hippocrates relied more on simple regimen than on materia medica. But this expectant treatment which observes and foresees the course of disease without attempting to act directly on its progress is not wholly satisfying. It is an excellent maxim that therapeutic measures should not in any way disturb the beneficent tendencies of nature—primum non nocitur—but what is to be done if the tendencies are malign? Surely, said some of the successors of Hippocrates, it is justifiable in those circumstances to combat and to try to dominate Nature. And so the reaction to mere expectancy in therapeutics began. The fashionable Roman physician, Asclepiades, coined his unfair aphorism that Hippocratic treatment was merely a "meditation upon death." The empiricists once more held sway. But the great achievement of Hippocratic medicine stood. It substituted observation, experience, and reasoning in place of theory and magic.

Then followed the tragedy of the dark ages, and for a thousand years, while Western Europe was plunged in intellectual darkness, no great change or advance in the treatment of disease took place. In the sixteenth century, when medical research and learning once more became part of the general

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activities of civilised nations, the naturalist-physicians began to take stock of their materia medica, and to write herbals which set out the botanical characteristics, external appearance, and origin of medicinal plants, together with some notes as to their value in the treatment of disease. About this time also, pharmacopœias or lists of drugs used in therapeutics began to be written, the first collection of medical recipes sanctioned by civil authority and enjoined to be used under penalties by dispensers and compounders of medicines being that of the town of Nürnberg, published in 1545.

Remedies Old and New.

I have no intention of entertaining you to an historical account of the evolution of the modern pharmacopœia, nor of attempting to excite disgust, ridicule, or amusement by giving a list of some remedies which have appeared even in comparatively recent pharmacopœias—remedies such as oil of dead men's bones, powdered worms, &c. The fact is that too much has been made of these monstrosities in the therapeutic armamentarium. When we are tempted to criticise too severely the therapeutic methods of our forefathers, we should remember that they were based on current theories of pathology, which are to the modern mind not only very crude but very curious. "Men," said Edmund Burke in sarcastic mood, "are wise with but little reflection . . . in the business of all times except their own." We smile or sneer at primitive man for his belief in a charm, in a prayer or a sacrifice to a god, or in some potion brewed in mystery by the old woman or medicine-man of his tribe. We should not forget that even to-day those of us who are irrational—and most men are irrational when they are tortured by disease or the fear of death—cling just a little to a faith in magic. We still like to think that there may be something to charm away our pain, that the deity at his grotto may heal us in a supernatural way, that the mysterious patent medicine may bring about a miraculous cure. Some of us still believe in the miracles of the faith-healer, of the nature-healer, of the layer-on of hands. Such follies and superstitions are all very natural, but if man were content to rely on them alone little progress would be made. Fortunately, throughout the ages there have been those who, following Paul's advice to the Thessalonians, have tried to "prove all things" and to "hold fast to that which is good." Their number has not been great, nor their influence until comparatively recent times marked, but they have been able to fashion the science of medicine by lopping off at least some of its effete and ridiculous branches.

We saw that at the revival of learning materia medica became allied to botany, and this alliance has persisted to recent times, for less than 50 years ago drugs were arranged according to their natural orders in all text-books of materia medica. The advance of chemistry at the beginning of last century led to a more accurate analysis of the crude remedies in use, and alkaloids and other active principles of plants came to be used in the treatment of disease. New drugs and new combinations of old drugs were introduced into practice, and toxicology or the effects of poisonous doses of drugs began to be studied on man and on animals. But all this was merely an advance in method and efficiency. It indicated no fundamental change in principle. The teaching of materia medica in the medical schools advanced but little, and up to comparatively recent times too much attention was paid to its descriptive or botanical side. There are certain drugs which every medical man ought to be able to recognise, but it must have been a wearisome task for the student of 50 or 60 years ago, eager to learn something of the actions and uses of the drugs which he was to employ in his practice, to sit through lectures devoted mainly to a minute description of the appearance, physical characters, and preparations of those remedies.

We must not be tempted, however, to blame our predecessors too much. Human progress, medically as well as politically, is never uniform along an unbroken front. One science is often held up because the sciences ancillary to it have not progressed sufficiently far to make a general advance possible. And what medicine needed to go forward by leaps and bounds was improved education, a large development of the scientific spirit, and a consequent great advance in the fundamental sciences. All this has happened since the middle of last century. Physics gave us instruments of precision hitherto undreamt of. Chemistry added to our pharmacopœia a large number of potential drugs, and also made it possible to study the chemical changes occurring in the body; and in biology there was an amazing outburst of activity in many fields. The genius of Pasteur and Koch founded the new science of bacteriology, and revolutionised our whole outlook and therapeutical aspirations in infectious diseases. Experimental physiology, under the inspiration of Claude Bernard, began to move to the forefront of scientific interest, and gave to observational or Hippocratic and also to empirical medicine the powerful instrument of the experimental method, and what is of greater importance, the experimental spirit. All this had a profound effect on materia medica. It compelled the pure empiricist to attempt to answer two important questions: (1) Is there a causal relationship between the giving of the drug and the cure of the disease?—often a very difficult point to decide. (2) How does the remedy act, and what light does it throw on the mechanism and nature of the pathological process?

Pharmacology.

This union of traditional materia medica with the experimental spirit led to the birth of modern pharmacology or pharmacodynamics, as it is sometimes called. Majendie, that pitiless critic and sceptic, was one of the first to investigate systematically the action of remedial agents, and since then workers in many parts of the world have followed his example, and in the same spirit. At first, pharmacological research was naturally directed towards analysing the mode of action of drugs in familiar use, and there is no question but that the increased knowledge obtained in this way led to increased accuracy in the employment of drugs in the treatment of disease, and also to a better understanding of disease processes themselves. Experimental pharmacology also, in association with synthetic chemistry, introduced into the clinical domain many drugs of first-rate importance—amyl nitrite, chloral and its derivatives, nearly all the hypnotics and analgesics, and in more recent times, many of the hormones—adrenalin, pituitrin, insulin. It is beside the point to say that some of these came from the laboratory of the chemist and of the physiologist, not from the workshop of the professional pharmacologist. Those who argue in this way have missed the significance of the whole trend of modern scientific thought—the essential unity of biological science, especially in its relationship to medicine. Every student of medicine is concerned with the reactions of living structures to the chemical and physico-chemical changes of their environment, that is, with pharmacology, biochemistry, physiology, and

pathology. It is impossible to establish boundaries between these subjects, and indeed in my view it is inadvisable to attempt to do so. But whatever we may call ourselves—physiologists, pharmacologists, pathologists, clinicians—we are first and last biologists, and we must realise that our own special subject is not so much a field as a focus of interest.

For the student of medicine there is no better connecting link between the basic and the clinical subjects than pharmacology. Consider its position in the curriculum. The student comes to it after completing his courses in anatomy and physiology, and he meets for the first time the chief weapons he is to use in his life's work. He feels that now he is making a real step in the direction of his final goal. He finds that pharmacology articulates with physiology, with pathology, and, most important of all, with clinical medicine and surgery. The function of the conducting tissue of the heart, for example, may have appeared to him merely as interesting, but now it assumes an added importance, for he learns of digitalis which acts specially on this tissue to depress its conductivity, and he begins to understand how the drug can be of supreme value in the treatment of certain pathological conditions leading to cardiac failure, and how modern research has given a rational explanation of what was at one time an "old-wife's" cure.

Divorce of Pharmacology from Therapeutics.

It is not surprising that experimental pharmacology which is so important, not only for the therapeutist but even for the physiologist and the pathologist, should have tried to raise itself more and more to the position of a pure science. But this unfortunately led to the break-up of the union of materia medica and the practice of medicine which had existed, as we have seen, since the origin of man. The pure science of pharmacology and the applied science of therapeutics became divorced. The gap between the laboratory and the clinic got wider and wider. This is a matter which has given rise in recent years to much controversy, and though it is difficult to keep clear of a natural bias, the matter demands some discussion.

The argument usually advanced to warrant the separation is that no one man in these days can follow the progress of clinical practice and of laboratory research with satisfaction to himself or profit to his students; and this argument has been carried to its logical conclusion in some of the American universities where the professor of pharmacology has no clinical knowledge, and may even have no medical qualification. Such an argument does not, however, take into account the fact I have already emphasised, that the study of medicine is the study of biological science, and that pharmacology is simply a focus of interest in that science devoted chiefly to the study of the action of drugs and remedial agents. And since, as is generally admitted, the ultimate object of pharmacological research is the healing of the sick, surely it is at least as important to study the action of remedial agents on the sick as it is to analyse their effects on healthy animals. No one will deny that there are many aspects of pharmacology which can be studied without reference to or knowledge of clinical medicine, and that great and good work has been and will be done under these circumstances. As in all other sciences, men can investigate with no ulterior motive save that of the simple acquisition of knowledge. Their work may not be immediately applicable to practical needs, but it will deepen and strengthen the foundations on which therapeutics is built. Like Saul, they may go forth to seek for asses and find a kingdom. But that does not mean that applied science should be neglected. The great Pasteur, immersed as he was in the researches which led to the greatest single change, and probably the most far-reaching one, which has ever taken place in medical theory, was constantly engaged in the solution of practical problems; and who shall say what mental stimulus he received from his practical work. Two views, diametrically opposed, have been held regarding medicine, as indeed regarding everything else worth while, since man could think at all. One is that theory is useless, that practice is the thing; the other, that practice is effete, and that the initiative has passed from the practical man to the theorist—in medicine, from the clinic to the laboratory. Both views are wrong. It is natural perhaps that much of the popular praise should fall to a man who makes an important therapeutic discovery. He is the immediate and obvious benefactor of mankind. But in the great enterprise of medicine it is vain for any special class of worker to arrogate the credit of most discoveries to his own class. It is foolish to attribute to a mere company the victory which rightly belongs to a whole army working in combination. It must never be forgotten that ideas freely current help to keep science fresh and living, and that pure science always receives stimulation and renewed vitality from its contact with practical problems. Physiology, in natural pride of its triumphs as a pure science, is apt to forget that it owes some of its greatest advances—namely, the idea of cerebral localisation and the idea of internal secretion—to its relation to medicine. How much more, then, will contact with clinical medicine give to pharmacology a fresh flow of ideas to invigorate and stimulate it! Apart altogether from such general considerations it must always be kept in mind that the great majority of the students of medicine intend to practise medicine, and are not concerned with pharmacology as a pure science; they study it to enable them to forge and to use the weapons required to counteract symptoms and cure disease. In my considered judgment, therefore, pharmacology in its widest sense can not and should not be studied exclusively either at the bedside or in the laboratory. Theory and practice must not be divorced.

Training for Medicine.

We must determine now, if we can, how our subject may best meet the needs of medical education and medical practice at the present time. From most of you society will not demand proofs of learning; it will not be interested in the physiological, anatomical, pathological, or chemical notions you may have acquired. It will want to know only if you can apply your knowledge to the treatment of disease. The whole aim and object of the medical curriculum is to teach students to treat disease rationally. It might be expected, therefore, that a great deal of attention would be paid in medical schools to the teaching of therapeutics, yet in actual fact little or no attempt is made to correlate systematic instruction in the principles and practice of rational treatment with clinical medicine. The fault lies, I think, in that the great advance which has been made in diagnostic methods during the past few decades by the application of biochemical, serological, and physical principles has taken hold of the minds of clinicians to far too great an extent. The result has been that, in the clinic, when the history and physical signs have been elicited, the diagnosis, differential

diagnosis, and prognosis discussed, and the pathological aspect of the disease fully considered, the all-important question of treatment is either ignored or is dealt with in such a perfunctory fashion that the student carries away no clear idea of the method of treating a similar case. The same applies to the clinician's attitude to therapeutical research. If his outlook is still dominated by the old views of pathology, his chief interest lies in the post-mortem room, and he regards his treatment merely as a means to placate the patient. In short, he is that pious fraud, the therapeutic nihilist. If, on the other hand, he is an enthusiast in treatment, he never fails to ascribe his good results to drugs, or vaccines, or ultra-violet radiations, or vitamins, though he has probably used so many agents in the one case that he would find it difficult to say which one had proved really valuable. And yet there is so much to be done. Each and every day in the practice of medicine an enormous amount of treatment is carried out, yet very little systematic attempt is made to determine fundamental laws, to bring to the clinique the spirit and methods of the laboratory, and to find out just what the drug is doing and how it acts. There are great difficulties in such researches, apart from the obvious difficulty of adequately controlling the experiments. But the effort would be well worth while. Even though it did not add one single positive element to therapeutics, it would render an enormous service if it helped to clear away the overgrowth of useless treatment, and let us see where we really are. Nothing is more needed in medicine than a vigorous and informed criticism, based on accurate and detailed examination of the effect of drugs and other remedial agents on patients.

Proprietary Remedies.

And that brings me to a cognate subject. The discovery of the therapeutic possibility of synthetic chemicals, patented and therefore proprietary, and the development of other products of the laboratory, vaccines, sera, endocrines, and vitamins, combined with the natural eagerness of the physician to help his patient, have led in recent years to a great deal of empirical treatment with these agents. Their origin in the scientific laboratory has been used to give a pretence of respectability to all kinds of misleading and uncritical statements in medical journals and by the profession, as well as in the trade journals devoted to their advertisement, which pour in daily on medical men. In fact, there has arisen in this country a condition of affairs not unlike that described by Sollman as existing in America in 1905. At that time, he said, the general practitioner, without the time or material for discriminating study, assailed on all sides by the laudatory literature of the advertising pages, and occasionally impressed by the fashionable consulting physician who was always looking for something new in therapeutics, was a helpless and easy victim for the skilful proprietor. I doubt if practitioners in this country are such easy victims, but the tendency is that way. A friend of mine, a general practitioner, wrote to me recently on this very subject. He complained that he and his colleagues were constantly being imposed on by attractive boosting of proprietary preparations, and he asserted that one of the clamant needs of the profession was for some authoritative statement as to how to discriminate between good and bad in drug advertisement. The American Medical Association attempted to deal with the situation by establishing the Council on Pharmacy and Chemistry. Not content with destructive criticism only, it gave attention to the constructive side. It issued a book, "New and Non-official Remedies," which is revised annually and which tries to give reliable information as to the action and uses of new drugs. In recent years the Council has taken up the logical position that the approximate value of a new drug should be determined accurately on patients as well as on animals before it is advertised to the profession. It would be too much to expect that the labours of the Council would free America from blatant advertisement and extravagant claims, but it has done good work, and the establishment of a commission along similar lines might be of advantage to this country.

But that, in my view, would not be enough. The student of to-day is the practitioner of to-morrow, and what is required more than anything is to interest him in exact therapeutic observation and experiment. He should not be kept in ignorance, as he so often is, of the medicinal or other treatment the patient is receiving. He should be required to observe for himself the effect, either immediate or remote, of remedial agents. He is usually told about these matters, but he should be encouraged to observe and to try to draw his own conclusions. He should see for himself that some diseases tend of themselves to get well, that others can be cured by therapeutic measures, that some can only be alleviated, and that certain of them in the present state of knowledge are hopeless. He should learn that treatment must be carried out according to a plan, and not in a haphazard fashion, and that each case presents in itself an interesting and important physiological and pathological experiment. In that way his critical powers will be developed, and without running the risk of falling into the pit of therapeutic nihilism, he will get an accurate knowledge of the success or partial or complete failure of therapeutic measures. It seems to me common sense that the student should have this experience before qualification rather than after; and I cannot understand why such a policy is not more generally adopted, for in a not inconsiderable experience of clinical teaching, I have found that there is nothing which interests the student more than to feel that he is taking part in the treatment of the patient. Credulity is the child of ignorance, and better teaching in therapeutics will go a long way to checking the influence of the advertising agents of new drugs, though of course it will never completely abolish it.

Education and Research.

The purport of my discourse will now be obvious. Materia medica in its widest sense—pharmacology, pharmacodynamics—call it what you will—is the science on which sound therapeutics is and always must be based. It should not be divorced from the practice of medicine. To my third year students, therefore, I propose to teach pharmacology as an applied science, always with the view to bringing it into relation with general medicine; and to final year students I intend offering a voluntary systematic course in the principles and practice of rational treatment. I hope to do more. The authorities of this university have realised that a clinical appointment is an essential adjunct to the chair of materia medica, and though my duties as extra-honorary physician to the Royal Infirmary are at present nominal, I hope that I shall soon have an opportunity of putting into practice the pedagogic principles I have preached to-day. My aim, in short, will be not only to abolish the artificial barrier which has been set up between the clinic and the laboratory, but to help to turn out students of medicine with a sound and critical first-hand knowledge of the treatment of disease.

One final word regarding the future. It has often been said that if we just knew more of the cause of disease we would be able to treat it better—that research in therapy must lag behind research as to causation. Not a bit of it! We have known the cause of tuberculosis for more than half a century, we think we know the ætiology of pneumonia, yet our method and means of curing both these diseases are sadly lacking in efficiency. They are much the same, in fact, as they were when Hippocrates laid down his regimen. On the other hand, long before the malarial parasite and quinine were dreamt of, cinchona bark was being skilfully employed in the sound and successful treatment of malaria. And to-day, though we are entirely ignorant of the real cause of rheumatic fever and pernicious anæmia, we have almost specific remedies for these diseases. Therapeutics, therefore, can advance on its own, provided new chemical substances and new biological products are placed at its disposal. In Germany, institutes of experimental therapeutics have been established, where chemist, physiologist, bacteriologist, and the experimental and clinical pharmacologist form a team for the production of new drugs and for their experimental and clinical trial. We in this country prefer not to be regimented in that way. Our genius appears to run more in the direction of individualistic effort. Yet it might be possible for the members of the different departments of our medical school to coöperate in work which may not only advance the reputation of this ancient university, but also help in the solution of the fundamental medical problem, the prevention and cure of disease.

INTRASACRAL EPIDURAL INJECTION IN THE TREATMENT OF SCIATICA.

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Although it is the purpose of this paper to describe the results obtained in the treatment of sciatica by intrasacral epidural injection, it is necessary at the outset to examine briefly the theories that have been advanced by different writers to explain the nature and mechanism of production of sciatic pain. This preliminary review is introduced in order to emphasise the difficulty experienced in allocating the series of cases discussed in this paper to any group or subdivision other than that of *primary* or *idiopathic* sciatica, and also to determine how far one is able to regard the response to this form of treatment as throwing some light on the ætiology of sciatica.

The nomenclature adopted in the definition of the varied forms of sciatica is in a state of chaos. Most writers seem to recognise two distinct types: (1) *primary*, *idiopathic*, or *essential* sciatica, and (2) *secondary* or *symptomatic* sciatica. In the latter group are placed all cases in which pain in the course of the sciatic nerve results from pressure on the nerve or its roots by neoplasms situated in the pelvis or by disease occurring in the hip-joint, sacro-iliac joint, and lumbosacral vertebræ. In a large group of cases no pressure lesion can be demonstrated, either by ordinary clinical means or with the aid of special methods of investigation; these have been referred to as instances of primary or idiopathic sciatica. The true ætiology of sciatic pain in this group of cases remains obscure, and it is in the attempt to allot to them their particular cause that speculative terminology has been introduced.

Sicard [1] adopted a classification of sciaticas based on anatomical lines and, according to the site of the lesion, referred to them as *high*, *middle*, or *low* sciatica. In the middle and low varieties the lesion producing the neuralgia is situated in the nerve plexus or nerve trunk. The term high sciatica indicates that the lesion has its site between the posterior root ganglia and the origin of the nerve plexus. Sicard applied the term *funiculitis* to this condition, and maintained that an inflammatory lesion of the bony canal through which the nerve root passes—i.e., a *neurodocitis*—was the real cause.

Danforth and Wilson [2] expressed the opinion that sciatic pain was a symptom of disturbance in the lower lumbar region of the spine, and that the lumbosacral junction supplied the commonest site of the lesion.

Putti [3] defined sciatica as a neuralgia caused by pathological conditions of the intervertebral foramina and articulations. He regarded it as a symptom of neurodocitis and lumbarthritis, and considered that the term idiopathic sciatica should be replaced by the more precise and adequate one of *arthritic* or *vertebral* sciatica, and that in order to treat the sciatica it was necessary to treat the arthritis.

Buckley [4] has recently investigated 45 cases sent to hospital with the diagnosis of sciatica. He concluded that 27 of these were cases of *secondary* or *symptomatic* sciatica, and that the remaining 18 were examples of sciatic neuritis.

In the experience of these writers, therefore, secondary or symptomatic sciatica occurs with greater frequency than the primary or idiopathic form. The results obtained from the present investigation do not lend support to this view, but indicate that when a careful survey has been made of the history of the illness, the clinical examination of the patient, and the radiological investigation of the lumbosacral region, and when hypothesis and mere speculation as to the probable cause of the neuralgia have been excluded, the majority of cases are instances of primary or idiopathic sciatica. The fact that the true nature of the lesion in these cases has remained obscure or cryptic warrants their inclusion in this group.

The Cases and their Treatment.

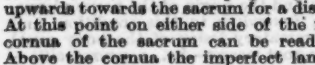
In accordance with the definition outlined in the previous paragraph, the 40 cases discussed here have been regarded as instances of primary or idiopathic sciatica. There were 21 males and 19 females. The age varied from 20 to 66, the average age being 40 years. The sciatic pain in all cases had been sudden in its onset, and had continued without intermission for periods varying from 5 days to 18 months; the average duration of symptoms was five and a half months. In all the 40 cases the neuralgia was confined to one side, and occurred in the right limb in 25 and in the left in 15. The pain, which was most severe in the thigh, radiated in the distribution of the sciatic nerve. There was no history of strain or injury, and no clinical evidence of disease in the lumbosacral part of the spine, and radiological examination in 15 cases failed to reveal any pathological changes in this region. Stretching of the affected sciatic nerve following flexion at the hip with extension of the knee produced pain (Lasègue's sign) in 39 cases. Tenderness on deep pressure over the nerve trunk was elicited in 30 cases; the degree of tenderness is indicated in the tables. The ankle-jerk was absent in eight and diminished in six cases. Septic teeth were found in nine cases. Large and hypertrophied tonsils were present in two cases. Treatment in the form of internal administration of drugs and external application of counter-irritants had been adopted in all the cases, but had proved of no avail. Massage, ionisation, electrical therapy, hot baths, stretching the nerve under general anæsthesia, injections of oxygen or saline along the course of the nerve, and splinting the affected limb were forms of treatment which had

been applied to some of the cases, but had produced no amelioration of the symptoms.

TECHNIQUE OF INTRASACRAL EPIDURAL INJECTION.

The patient lies on the affected side with thighs and legs slightly flexed. The triangular outlet of the sacral canal is then defined in the following way. The tip of the coccyx is first located, and the palpating finger is made to slide upwards towards the sacrum for a distance of about 2 inches. At this point on either side of the mid-line the prominent cornua of the sacrum can be readily felt in most cases. Above the cornua the imperfect laminæ of the fifth sacral vertebra are found to converge to form the apex of the triangular outlet of the sacral canal. The mid-point between the two sacral cornua marks the site of the injection (Fig. 1), and an arrow pointing to this spot should be outlined on the skin by means of a grease pencil. The skin and the track of the needle is then infiltrated with 2 per cent. novocain, and sufficient time is allowed for the production of efficient local anæsthesia. A lumbar puncture needle is then introduced into the sacral canal. After penetration of the skin the needle should assume the direction indicated by arrow A in Fig. 2 in order to transfix the sheet of tough fibrous tissue that roofs over the outlet at this site. Immediately the point of the needle penetrates this tough sheet its direction should be changed as indicated by arrow B in Fig. 2; it is then advanced for an inch. A syringe is applied to the needle, and an attempt is made to withdraw the piston for a short distance. If cerebro-spinal fluid is aspirated the needle has been advanced too far and must be withdrawn a short distance. This precaution is necessary in order to ensure that the point of the needle lies in the sacral canal outside the spinal theca. The sterile solution, previously warmed to body temperature, is then introduced slowly by means of a 25 c.cm. syringe. The operation throughout must be conducted under aseptic precautions. The patient should rest quietly on the affected side for half an hour, and remain recumbent for 24 hours after the injection.

FIG. 1.



Showing the anatomical boundaries of the outlet of the sacral canal (O.S.C.). S.P.4 = spinous process of 4th sacral vertebra. S.C. = sacral cornu.

SUBJECTIVE SYMPTOMS DURING THE INJECTION.

All the patients experienced a feeling of distension or discomfort, but few of actual pain in the sacral region at the time of the injection. These symptoms became aggravated towards the end of the operation, when considerable pressure was required in the introduction of the fluid. Headache, which was present in a few cases, was never severe. Many of the patients experienced much pain in the distribution of the affected sciatic nerve, and as this symptom appeared to indicate that the nerve was being stretched it was thought that its presence in any particular case predicted a favourable result. Further experience did not confirm this view, but showed that this sign did not appreciably influence the prognosis. Where over 100 c.cm. of 1 per cent. solution of novocain had been injected, the patients occasionally experienced abnormal sensations or paræsthesiæ, such as formication. A few said that they had found it difficult to control a desire to shout or scream. These sensations, although uncomfortable, were never serious, and usually lasted for only ten minutes after the injection. Alarming symptoms occurred in only one instance, where cyanosis, opisthotonos, unconsciousness, and incontinence of urine and fæces followed the injection of

FIG. 2.

Sagittal section of lumbo-sacral region. D = dura.

120 c.cm. of 2 per cent. solution of novocain; consciousness returned within half an hour; sphincter control was re-established 12 hours later, and recovery was complete.

RESULTS OF TREATMENT.

To facilitate the study of the results, the 40 cases are placed in four groups, as indicated in the tables. Cure resulted in 22, or 61·1 per cent. Improvement occurred in 5, or 13·9 per cent. The treatment failed to relieve the symptoms in 14 cases, or 25 per cent. Of four patients who could not be traced, immediate and complete relief from the sciatic pain had followed the injection in three, while improvement had occurred in the fourth (Table I.).

TABLE I.—*Showing the Results of Treatment by Intrasacral Epidural Injection in 40 Cases of Sciatica.*

—	Cure.		Patients not traced.		No relief.	Improved.	Improved temporarily but relapsed
	After 1st inj.	After 2nd inj.	Immediate and complete relief.	Immediate improvement.			
Cases and percentage.	20	2	3	1	2	5	7
	61·1 %				(5·6) %	(13·9) %	(19·4) %

The 22 cases classified as "cured" experienced immediate and complete relief from the sciatic pain, and remained free from symptoms on resumption of their customary occupation and mode of life. In 20 cases the cure followed one injection; and in two it followed a second. Fuller details concerning the cases included in this group are outlined in Table II.

The five "improved" cases were able to return to their work within a week of the injection. They reported that they had been "cured" of their sciatica, but since they occasionally experienced slight pain they have been classified as cases showing improvement rather than cure. Further particulars of these cases are given in Table III.

The details in nine cases where this method of treatment proved of no avail are outlined in Tables IV. and V. In seven of these, although temporary improvement followed the injection, the pain returned

TABLE II.—*Details of 22 Cases where Cure of Sciatica Resulted from Intrasacral Epidural Injection.*

Sex.	Age.	Duration of symptoms.	Side affected.	Tenderness over sciatic nerve.	Ankle-jerk.	Nature and quantity of solution injected.	Interval between inj. and last inquiry.
F.	50	10 w.	Left.	Present.	Present.	30 c.cm. 1% nov. 50 ,, saline.	2½ y.
M.	25	3 m.	Right	,,	,,	60 ,, 1% nov.	3½ y.
M.	42	4 m.	Left.	,,	Absent.	20 ,, ,, ,, 70 ,, saline.	3 y.
F.	20	18 m.	,,	Slight.	Dim.	20 ,, 1% nov. 60 ,, saline.	3 y.
F.	47	3 m.	,,	Absent.	Present.	70 ,, ,, ,,	6 m.
F.	46	5 m.	,,	,,	,,	20 ,, 1% nov. 80 ,, saline.	16 m.
M.	47	3 m.	Right	Marked.	,,	80 ,, ,, ,,	2 y.
F.	36	6 m.	Left.	Absent.	,,	125 ,, 1% nov.	5 m.
M.	33	18 m.	,,	,,	,,	(1) 80 ,, saline. (2) 140 ,, ,, ,,	1 m.
F.	55	6 m.	Right	,,	,,	120 ,, 2% nov.	2 y.
F.	52	12 m.	Left.	Slight.	,,	120 ,, ,, ,,	8 m.
M.	36	4 m.	Right	,,	,,	70 ,, ,, ,,	14 m.
M.	42	4 m.	,,	Absent.	,,	(1) 120 ,, 1% ,, (2) 65 ,, ,, ,,	12 m.
M.	45	3 m.	Left.	Present.	Dim.	20 ,, ,, ,, 85 ,, saline.	16 m.
M.	39	12 m.	Right	Absent.	Present.	20 ,, 1% nov. 80 ,, saline.	7 m.
F.	49	8 w.	Left.	Marked.	,,	20 ,, 1% nov. 60 ,, saline.	2 y.
M.	33	4 w.	,,	Absent.	Absent.	100 ,, 1% nov.	12 m.
F.	36	2 m.	Right	Present.	Present.	30 ,, ,, ,, 100 ,, saline.	2½ y.
M.	30	12 m.	Left.	Absent.	Absent.	20 ,, 1% nov. 80 ,, saline.	12 m.
F.	39	3 m.	Right	Present.	Present.	80 ,, ,,	21 m.
F.	33	6 m.	Left.	,,	,,	100 ,, 1% nov.	3 m.
F.	33	7 m.	Right	,,	Dim.	145 ,, ,, ,,	2 m.

y. = years; w. = weeks; m. = months.
Dim. = diminished; nov. = novocain.

TABLE III.—*Details of Five Cases where Improvement Occurred After Intrasacral Epidural Injection.*

Sex.	Age.	Duration of symptoms.	Side affected.	Tenderness over Sciatic nerve.	Ankle-jerk.	Nature and quantity of solution injected.	Nature and duration of modified symptoms after inj.
F.	39	7 w.	Right	Present.	Absent.	100 c.cm. 1% nov.	Slight, 4 m.
M.	29	6 w.	,,	Slight.	,,	20 ,, ,, ,, 60 ,, saline.	Slight, 3 m.
F.	66	6 m.	,,	Present.	Present.	100 ,, 1% nov.	Slight, 3 w.
M.	26	6 m.	,,	,,	Absent.	(1) 100 ,, ,, ,, (2) ,, ,, ,, ,,	Slight, 12 m*.
F.	59	3 w.	,,	,,	Present.	120 ,, ,, ,,	Slight, 10 m.†

* "Pain more like rheumatism."
† Periodic attacks of slight pain for 10 months.

TABLE IV.—*Details of Seven Cases where Temporary Relief from Sciatica was Followed by a Relapse.*

Sex.	Age.	Duration of symptoms.	Side affected.	Tenderness over sciatic nerve.	Ankle-jerk.	Nature and quantity of solution injected.	Period of relief.	Further duration of symptoms.
F.	43	6 m.	R.	Pres.	Abs.	20 c.cm. 1% nov. 100 ,, saline. 2nd inject. ,,	1 d. 14 d.	— 14 d.
M.	50	4 m.	,,	,,	Pres.	30 c.cm. 1% nov. 100 ,, saline.	1 d.	3 m.
M.	51	7 w.	L.	,,	Dim.	20 ,, 1% nov. 100 ,, saline.	3 d.	2 m.
M.	21	7 w.	R.	Slight	Pres.	(1) 85 ,, 1% nov. (2) 100 ,, ,, ,,	None. 1 w.	12 m.
F.	35	8 m.	,,	Pres.	,,	(1) 120 ,, ,, ,, (2) 100 ,, ,, ,,	2 w. 1 m.	6 m.
M.	53	10 m.	,,	,,	Dim.	20 ,, ,, ,, 100 ,, saline. 2nd inject. ,,	1 w. 2 w.	— 3 m.
F.	35	5 d.	,,	,,	Pres.	60 c.cm. ,,	1 w.	3 m.

R. = right; L. = left; Abs. = absent; Pres. = present.

after an interval of relief which varied from one day to a month.

TABLE V.—*Details of Two Cases where Intrasacral Epidural Injection Provided no Relief from the Sciatica.*

Sex.	Age.	Duration of symptoms.	Side affected.	Tenderness over sciatic nerve.	Ankle-jerk.	Nature and quantity of solution injected.	Further Duration of symptoms.
M.	46	2 m.	Right	Present.	Absent.	120 c.cm. 1% nov.	3 m.
F.	30	10 m.	Left.	Absent.	Present.	20 ,, ,, ,, 100 ,, saline.	8 m.*

* Still present 8 months later.

QUANTITY AND NATURE OF THE FLUID INJECTED.

Between 60 c.cm. and 145 c.cm. of fluid had been introduced into the sacral canal in those cases where cure of the sciatica followed epidural injection; the average quantity injected was 98 c.cm. An average of 100 c.cm. was used in the cases where improvement of the symptoms followed the injection. In the cases where the injection failed to alleviate the sciatic pain, an average of 110 c.cm. of fluid had been used. These figures, together with those recorded in the tables, suggest that success does not depend on the quantity of fluid introduced. The amount of fluid recommended for injection is from 60 c.cm. to 80 c.cm. It was rare to experience any degree of resistance to the introduction of the solution until the quantity injected had exceeded 60 c.cm.

Forty-seven injections were given in the 40 cases discussed in this paper, the injection being repeated in seven cases. Normal saline was used in six cases, 1 per cent. novocain in 17, and 2 per cent. novocain in 3 cases; in 21 cases the first 20 c.cm. to 30 c.cm. of the fluid injected consisted of 1 per cent. novocain, and this was followed by normal saline. A study of the results indicates that relief from sciatic pain is in no way dependent on the nature of the solution introduced. Of six cases where normal saline was used, immediate and complete cure followed the injection in five.

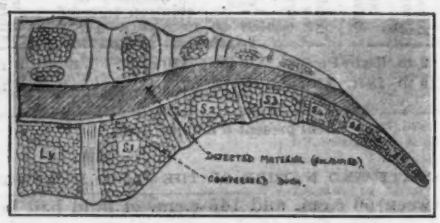
How Pain is Relieved.

From clinical observation it was difficult to see the exact manner in which intrasacral epidural injection cured sciatica. The fact that some of the patients experienced pain in the course of the affected sciatic nerve during the injection, and also that normal saline appeared to be as efficacious as novocain solution in affording relief from sciatic pain, seemed to indicate that the introduction of fluid into the sacral canal in some way produced stretching of the sciatic nerve trunk or its roots. In the attempt to elucidate its mode of action the following investigations were conducted.

Expt. 1.—All the nerves emerging from the lumbosacral region in a cadaver were divided, and the sacrum and lower three lumbar vertebræ were removed and placed in 4 per cent. solution of formalin for 12 hours. The anatomical relationship of the lower part of the spinal theca and the nerve roots which join to form the sciatic nerve was studied in sagittal and transverse sections of the lumbosacral vertebræ. The appearances of the sections are shown in Figs. 2 and 4. The nerve roots have been divided immediately before they pass through the dural sheath. The nerve roots in their extradural course and proximal to their passage into the sacral foramina were found to measure from 1 in. to 1½ in. in length. The epidural space, which is filled with fat, is prolonged upwards in the spinal canal and invests the dural covering of the spinal cord. The ventral or anterior compartment is traversed by firm fibrous bands which bind the theca to the intervertebral discs, so that some difficulty was experienced in completely separating

the dura from its attachment or anchorage to the anterior wall of the spinal canal. In its posterior and lateral aspects, however, there is no anchoring of the dura to the bony wall, so that it was possible to separate it and to enlarge the space at the expense of displacing the dural tube and its contents forwards. This study of the sacral space and its spinal prolongation has facilitated the true interpretation

FIG. 3.

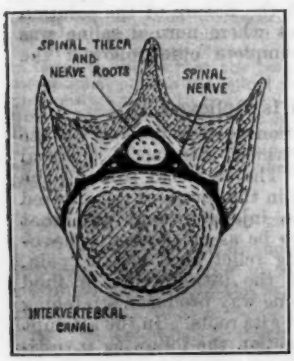


Sagittal section of the lumbo-sacral region, showing compression and anterior displacement of the dural tube and its contents following intrasacral epidural injection.

of the results obtained from intrasacral epidural injection in cases of sciatica.

Expt. 2.—It then became necessary to study the manner in which these anatomical relations became disturbed after the introduction of fluid under pressure into the sacral space; 20 g. of gelatin were dissolved in 100 c.cm. of water to which 0·5 g. of methylene-blue had been added. This mixture, when heated, could be forced through a standard lumbar puncture needle; it solidified on cooling; 50 c.cm. of this medium was injected into the sacral space of a fresh cadaver, and later an examination was made of the lumbo-sacral vertebræ in sagittal section, and of the upper part of the fifth lumbar vertebra in transverse section. The appearances are shown in Figs. 3 and 5. It was found that the injected material had separated the dura from its normal close anatomical contact with the posterior and lateral walls of the spinal canal, and had displaced it forwards and inwards. The anterior segment of the dura, in virtue of the anchoring fibres described in the previous section, was found to have preserved its close relationship with the posterior surface of the vertebral bodies. This compression of the dural tube and its contents is readily appreciated by comparing Fig. 2 with Fig. 3 and Fig. 4 with Fig. 5. These changes within the spinal canal were traced as far as the first lumbar vertebra. In cases where 100 c.cm. of the material had been injected the dye could be traced as high as the upper cervical region.

FIG. 4.



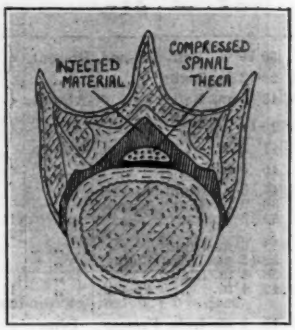
Transverse section through the body of the fifth lumbar vertebra.

The injected material, however, does not remain confined to the spinal canal, and the solidified gelatin dye mixture was found to have been forced along the vertebral foramina, forming sleeve-like projections along the course of the emerging nerves. This escape of the injected material occurs quite early during the injection, and commences when only 10 c.cm. of fluid have been introduced. It is possible that this contributes to the relief of sciatica in those cases where the pathological lesion is believed to be a neurodocitis.

Expt. 3.—The lumbosacral vertebræ were exposed in the cadaver and the dura was divided at the level of the fourth lumbar vertebra. Water was then injected into the sacral canal through the sacrococcygeal opening, and the displacement of the dura was carefully noted. Not only did the compression of the dural sheath forwards and inwards produce a stretching of the nerve roots, but also the pressure exerted by the water displaced the dural tube upwards, and in this way further augmented the stretching effect. This upward shift of the posterior part of the dural sheath and the cauda equina measured 1/10 in.

Expt. 4.—A lumbar puncture needle connected with a manometer was inserted in the space between the fourth and fifth lumbar spines in a case of sciatica where treatment by intrasacral epidural injection was in progress. The effect of the injection on the cerebro-spinal fluid pressure was then noted, and the results obtained have been plotted and illustrated by means of a chart (Fig. 6). The quantity of fluid introduced into the sacral space has been indicated on the abscissa, and the pressure on the ordinate. The continuous lines represent the rise in the pressure during each separate introduction of 2 or 4 c.cm. of normal saline into the sacral canal. The discontinuous lines represent the fall in pressure which followed each injection; this fall in pressure occurred gradually, and the resting level was only reached after an average interval of two minutes. When 30 c.cm. had been introduced into the canal the pressure remained stationary, oscillation of the fluid in the manometer ceased, and the further injection of 50 c.cm. of saline did not influence the reading. This sudden interruption in the manometric reading can be explained by the fact that the introduction of 30 c.cm. of saline into the epidural sacral space had obliterated the subdural space up to the level of the lumbar puncture needle.

FIG. 5.



Transverse section through the body of the fifth lumbar vertebra, showing the anterior displacement and compression of the spinal theca and its contents after intrasacral epidural injection of the dye.

FIG. 6.

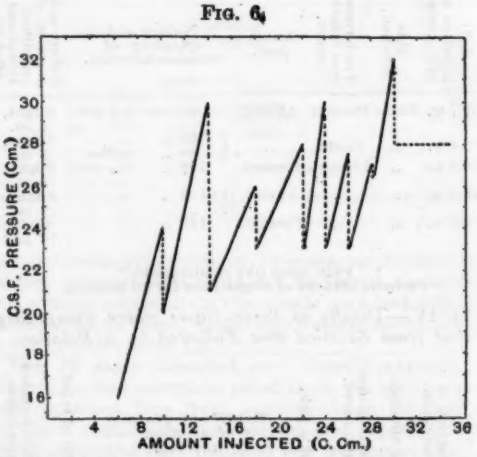


Chart to show the variation in the cerebro-spinal fluid pressure during intrasacral epidural injections.

Conclusions.

1. If mere theoretical conjecture is excluded in the differential diagnosis of the various types of sciatica it is found that the majority of cases fall into the group known as *primary, idiopathic* or *essential* sciatica.

2. Intrasacral epidural injection in the treatment of primary sciatica produces immediate and complete relief or cure in over 60 per cent. of the cases. A further 13 per cent. derive considerable benefit from the treatment.

3. Clinical results have shown that it is unnecessary to inject more than 80 c.cm. of fluid, whilst the experimental data indicate that the desired effect can be obtained from the introduction of only 30 c.cm.

4. No special advantage is derived from the use of novocain solution, and normal saline appears to be equally efficacious.

5. A mechanical stretching of the nerve roots that go to form the sciatic nerve appears to be the important factor in the cure of sciatica by intrasacral epidural injection. This conception of the modus operandi is supported by three main facts, namely: (1) Many of the patients experienced pain in the course of the affected sciatic nerve during the injection. (2) Introduction of saline into the sacral canal appeared to be as efficacious as novocain solution in alleviating the sciatic pain. (3) Visible stretching of the nerve roots was observed in the cadaver during the injection.

I am indebted to Dr. Theodore Thompson and Prof. A. W. M. Ellis for allowing me to include in my series cases admitted under their care at the London Hospital. I also wish to thank Prof. Hubert M. Turnbull for permitting me to use the material in his department for the purpose of conducting some of the experiments cited in this paper.

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OBSERVATIONS ON THE METABOLISM OF HUMAN MAMMARY CARCINOMA.

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THE metabolic studies of Warburg and his collaborators on cancerous and other tissues have shown that the two fundamental processes occurring in cells are: (1) *respiration*—i.e., the consumption of atmospheric oxygen, the resulting oxidation of organic metabolites, and the liberation of carbon dioxide; and (2) *glycolysis*—i.e., the cleavage of the carbohydrate molecule without participation of atmospheric oxygen, leading to the production of two molecules of lactic acid from one molecule of carbohydrate.

These two types of chemical change are not independent reactions, but are related by a more or less quantitative coupling, so that an increase in the value of respiration results in a corresponding diminution in the extent of aerobic glycolysis. In most normal tissues the aerobic glycolysis is small or zero. Under anaerobic conditions the amount of glycolysis is largely dependent on the properties of growth and regeneration of the tissue, so that embryonic tissues, for example, have a high anaerobic glycolysis.

Warburg's methods have been applied particularly to a study of tumours, and the earlier work, which was done principally on transplanted rat tumours, suggested that tumours might be classified metabolically on the basis of the relation of the respiration to the glycolysis. It was thought that in tumours the respiration was too small to prevent lactic acid production. More recent work on spontaneous and transplanted mice tumours (Murphy and Hawkins, 1925; Crabtree 1929) has shown that this is not generally true. In addition to this difficulty, apart from tumours certain granulomatous overgrowths (Crabtree 1929, Dickens and Šimer 1930), as well as the retina and mammalian erythrocytes are characterised by the production of a considerable amount of aerobic lactic acid. It appears, therefore, that there is some defect in respiration in all these tissues (Warburg 1929), which defect has been shown to lie in the oxidation of carbohydrate. (Dickens and Šimer, 1930.)

It is, therefore, clear that aerobic glycolysis is not a specific feature of tumours. There is, however, a need at present for more experimental observations on comparable series of tumours to show if any generalisations may be arrived at as to the relation of metabolism to the histological and clinical details of such a series of cases. In the present paper the results obtained in a series of cases of human mammary carcinoma studied by the above methods are reported; this material comprises tumours of varying degrees of cellularity, differing in type and arrangement, and with different degrees and types of connective tissue response. The metabolic investigations were, therefore, combined with a histological study of the tumours. In addition to the tumour tissue, two portions of breast showing intraductal epithelial hyperplasia were examined, and also one case of chronic cystic mastitis and a portion of unchanged breast tissue near a growth.

Method and Results.

The breasts to be examined were obtained immediately after surgical removal. In each case a suitable portion of tumour was selected, and the metabolic investigations at once begun. As a rule, the time intervening between the removal of the specimen from the patient and the commencement of preparation of the material did not exceed 5–10 minutes, and readings were, as a rule, begun under 40 minutes after removal by the surgeon.

The improved method of Warburg (1924) was used in all experiments. The medium contained sodium bicarbonate ($2{\cdot}5 \times 10^{-2}$ molar) and 0·2 per cent. glucose. The gas mixture with which the vessels were filled consisted of 5 per cent. CO_2 in O_2 or N_2 as required. Ringer's solution was used in all experiments with the exception of numbers 1 and 2, in which inactivated horse serum containing 0·25 per cent. glucose was used. As far as possible duplicate estimations were made, and the uniformity of the tissue was controlled by changing over the large and small volumes of fluid in the two vessels used for the measurement of aerobic metabolism and continuing the measurement under these reversed conditions. If the two sets of readings were not substantially the same, the experiment was discarded, since this showed that the tissue was not sufficiently uniform.

Histological Investigation.—After the thin slices of the selected portion of the tumour had been obtained for the metabolic estimations, the remainder was fixed and blocked out for microscopical section, the surface cut being that from which the slices for the metabolic examination had been removed. In this way, a microscopical field was obtained of tissue immediately adjacent to that examined metabolically. The character and arrangement of the actual carcinomatous tissue was noted, and also

the degree and type of connective tissue response. As an index of the proportion of carcinoma to connective tissues, the number of carcinoma cells in 200 standard fields of 1/40 sq. mm. was counted, and an average per field thus obtained which was known as the "carcinoma cellularity index." In the case of the connective tissues, the amount of fibroblastic and elastic tissue reaction was noted, and the degree of small round-celled infiltration.

Results.—The main clinical and pathological features of the 20 cases examined, together with the metabolic findings, are given in the Table.

Discussion.

As will be seen from the above examples, the metabolic reactions of human mammary carcinoma correspond on the whole with those of animal tumours in showing a large amount of aerobic lactic acid production. Whereas, however, with the transplantable animal tumours one is dealing with homogeneous material almost entirely composed of tumour cells, in human material the issue is complicated by the varying cellularity of different tumours. The technical difficulties, therefore, in dealing with human tumours are greater and the figures obtained show a wider variation.

Of the factors which influence the figures, the most obvious is the relative amount of growth to stroma. Thus, in Case 6, which was a very fibrous growth with a carcinoma cellularity index of only 10, extremely small figures were obtained. On the other hand, the cases with a high carcinoma cell content such as specimens No. 7, 8, 12, and 15, with indices respectively of 78, 100, 63, and 166, show comparatively high figures.

In some cases, however, a high value of respiration and glycolysis is associated with a low carcinoma cellularity index, the most marked example of which is Case 5 B. This was a secondary axillary mass, and reference to the Table will show how out of proportion its metabolic figures are to its low carcinoma cellularity index of 8. The histological picture in this case showed extensive small round inflammatory celled infiltration around the actual carcinoma cells, and these inflammatory cells must have influenced the metabolic measurements appreciably. No. 11 is another case associated with round-celled infiltration which gives higher figures than would be expected from the number of cancer cells present. It is obvious, therefore, that such small round-celled infiltration in a tumour must be taken into account in any attempt to interpret the results quantitatively. The presence of proliferating fibrous tissue cells probably also introduces similar complications.

The majority of the cases showed a positive U-value—i.e., the respiration was small compared with the glycolysis (Warburg, 1927), but four cases—numbers 1, 9, 14 A, and 16—gave a negative U-value. In all these cases the respiration was high compared with the glycolysis, and the results are similar to those observed in spontaneous mouse tumours (Murphy and Hawkins, Crabtree). The system of classification whereby a tissue showing a positive U-value was considered to be a tumour has now been definitely abandoned by its author.

RESULTS OF CLINICAL, HISTOLOGICAL, AND METABOLIC EXAMINATION OF HUMAN MAMMARY CARCINOMA.

Spec. No.	Age in yrs.	History, growth, &c.	Diameter in inches.	Cellular index (cancer cells only).	Connective tissues.	Lymphatic glands.	Metabolism.			
							Respn. Q_{O_2}.	Glycolysis. Aerobic $Q^{O_2}_{CO_2}$.	Glycolysis. Anaerobic $Q^{N_2}_{CO_2}$.	U.
1	65	1½ yrs.; small slowly growing tumour.	—	47	Elastic +.	Not invaded.	11	13	19	−3
2	42	2 years.	2½	17	Fib. +.	Invaded.	2	2	7	+3
3	70	Peau d'orange.	1½	32	—	,,	2	5	11	+7
4 A	—	2 years.	½	48	—	,,	†0·6	5	10	? +9
B		Neighbouring intraductal epithelial hyperplasia.		33	—	—	0·4	1·1	1·8	+1
5 A	53	3 yrs.; recent rapid growth.	2	10	S.R.C. + +.	Invaded.	1·5	7	10	+7
B		Axillary secondary.	3½	8	S.R.C. + +.	—	5	14	15	+5
6	65	5 mths.	2	10	Elastic +.	Invaded.	V.S.	V.S.	V.S.	—
7	72	2 yrs.	1	78	S.R.C. +. Fib. +.	,,	12	4	24	0
8	82	15 mths.; X rays given.	4	100	S.R.C. +.	,,	9	14	22	+4
9	77	7 mths.	2	19	Elastic + Fib. +.	,,	1·2	0·2	1·6	−0·8
10	54	Several years' history; large ulcerated growth.	—	33	S.R.C. +.	Not sectioned.	1·7	2·5	3·8	+0·4
11	49	18 mths.	¾	22	S.R.C. +.	,,	3·5	4·5	14	+7
12	49	2 mths.	1	63	Patches of S.R.C.	Invaded.	4·5	12	14	+5
13	50	2 yrs.; precarcinomatous mastitis.	—	13	S.R.C. +.	Not invaded.	S.	S.	5	—
14 A	52	3 mths.	2	13	S.R.C. +.	,,	8	3	6	−10
B		Surrounding breast tissue.	—	—	Much F.t.	—	1	10	—	—
15 A	69	5 mths.	1½	166	Almost pure tumour.	Not invaded.	4	9	15	+7
B		Gland.	—	—	—	—	V.S.	V.S.	0·7	—
16	73	3 mths.	1½ × 2	39	Fib. +.	Not removed.	7	7·5	11	−3
17	56	1 yr.	2 × 1½	44		Invaded.	8	9	22	+6
18 A	—	4 mths.	1	38	S.R.C. +.	Not invaded.	2·5	5	10	+5
B		Surrounding breast tissue.	—	6	Mostly F.t.	—	V.S.	V.S.	V.S. (ca. 0·2–0·4).	—
19	—	Chronic cystic mastitis.	—	4	,, ,,	—	V.S.	V.S.	V.S.	—
20	42	History unreliable.	3	40	—	Invaded.	1·7	2·9	7·1	+4

Explanation of Table.—Connective tissues: Fib. = fibroblast. F.t. = fibrous tissue. S.R.C. = small round inflammatory cell infiltration. Respiration: Q_{O_2} = no. of c.mm. O_2 respired by 1 mg. (dry wt.) tissue per hour. Glycolysis: $Q^{O_2}_{CO_2}$ = no. c.mm. CO_2 liberated from bicarbonate by 1 mg. (dry wt.) tissue per hour under aerobic conditions. $Q^{N_2}_{CO_2}$ = no. c.mm. CO_2 liberated from bicarbonate by 1 mg. (dry wt.) tissue per hour under anaerobic conditions. V.S. = very small. U-value: excess fermentation or $U = Q^{N_2}_{CO_2} - 2Q_{O_2}$ (see Warburg 1927).

In the few cases in which portions of breast other than those invaded with growth—4B, 14B, 18B—were examined, the figures were too small to allow of accurate measurement. This was also the case with the chronic cystic mastitis specimen—No. 19. In all these cases the proportion of cells to fibrous stroma was small.

CONCLUSIONS.

The above study shows that the metabolic reactions of human mammary carcinoma are similar on the whole to those of the more homogeneous transplanted animal tumours. The high aerobic glycolysis found in transplanted animal tumours is also found in these human tumours, but the results are more variable in the latter. The two chief histological factors which can be correlated with this variability are (1) the amount of actual carcinomatous tissue present, (2) the degree of inflammatory cell stromal reaction. Owing to the great variations in metabolism associated with these factors, it is at present impossible to attempt to correlate the clinical with the metabolic findings.

We wish to make acknowledgement for a grant from the British Empire Cancer Campaign (D. H. P.) and a whole-time grant from the Medical Research Council (F. D) which have enabled us to carry out this work.

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ACCESSORY LOBE OF THE AZYGOS VEIN.

A REVIEW AND A CASE.

BY G. GREGORY KAYNE, M.D., M.R.C.P. LOND.,
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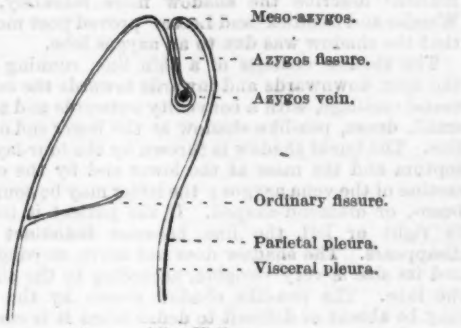
ANOMALIES in the gross structure of the lungs, as shown by variations in the number of lobes and fissures, are common. Fissures may be incomplete or absent or, on the other hand, the lung may be divided into as many as nine lobes (Scammon[22]). All these conditions are caused by a faulty branching of the bronchial tree.

A different and rare type of anomaly is that associated with an abnormal position of the azygos vein. Normally the azygos vein runs upwards in the posterior mediastinum behind the right root of the lung and then curves forwards over the root to enter the posterior aspect of the superior vena cava immediately before the latter vessel pierces the pericardium. In the cases described here the vein is situated more laterally—behind the right lung. To reach the superior vena cava it makes a much larger curve, cutting deeply into the right superior lobe. It thus marks off an accessory lobe in the internal portion of the superior lobe. This is the "azygos lobe," more accurately termed the "accessory lobe of the azygos vein."* The azygos vein joins the superior vena cava on its lateral surface and at a much higher level than normally, almost at the level of the left innominate vein (Hjelm and Hultén[3]). As the vein sinks into the substance of the lung to reach the superior vena cava it carries with it a double fold of the parietal pleura, so that the septum, at the bottom of which the vein lies, is formed by four layers of pleura. This is shown in Fig. 1, where an ordinary septum is

FIG. 1.



After Keijser.

depicted for comparison. Hjelm and Hultén have applied the term "mesoazygos" to the triangular fold of pleura thus formed at the apex of the lung. Grüber (quoted by H. Müller[20]) has described four cases and H. Müller one case in which there was no reduplication of the parietal pleura in the fissure. Müller explained his case as due to herniation of the lung through the mediastinal pleura in the normal recess between the azygos vein and the spine. Leeser[6] made a histological examination of his post-mortem specimen, but could not demonstrate the four layers of pleura in the fissure.

The abnormality was first described by Wrisberg in 1777,† and the lobe has, therefore, often been referred to as the "lobe of Wrisberg." Since that time the condition has been noted by several anatomists and pathologists. Stibbe[23] (1919) collected 23 cases from the literature. Three further cases were reported by Cairney[15] in 1923. More recently, Hjelm and Hultén[3] and Bendick and Wessler[2] have each described two cases examined post mortem, and Leeser[6] has similarly published one case. Evidence that the condition is due to an abnormality of the bronchial tree and that the accessory lobe really belongs to the apex was given by Geddes[18] (1910) and Holtby[19] (1915), who studied the branching of the eparterial bronchus. Further, Wessler and Bendick injected the trachea of one of their post-mortem specimens with lipiodol and then showed by radiography that the azygos lobe was supplied from the eparterial bronchus and not by a separate branch from the right main bronchus.

Two opposite views on the ætiology of this condition have been brought forward. Cleland[16] (1870) suggested a very early fœtal adhesion of the lung to the chest wall, preventing the vena azygos from following its normal course. There is no evidence for the existence of such adhesions. Orth[21] (1887), on the other hand, believes the main feature to be the developmental anomaly of the azygos vein. In support of his view may be quoted (1) the fact that the insertion of the vena azygos into the superior vena cava is abnormal, and (2) the fact that Bluntschli[14] (1905) demonstrated the azygos vein already situated

* The term "azygos lobe" has also been used to name a small, pyramidal accessory lobe, which makes its appearance on the *lower* part of the mediastinal surface of the right lung. Such a lobe is constant in certain mammals.[17] For the sake of brevity the name "azygos lobe" will be employed in this article in place of the more cumbersome "accessory lobe of the azygos vein."

† His case also demonstrated an accessory lobe on the left side, due to an abnormality of the left superior intercostal vein.

laterally in a 10·5 mm. embryo. Suess[11] suggests that heredity may play a part.

Radiological Appearances.

Wessler and Jaches,[13] in 1923, described a "unique" linear shadow which they occasionally saw in films of the upper lobe of the right lung. They could not explain it, but in 1927 G. Velde[12] suggested that it might be related to the azygos lobe. Hjelm and Hultén[3] describe the shadow more minutely, and Wessler and Bendick[2] and Leeser[6] proved post mortem that the shadow was due to an azygos lobe.

The shadow consists of a thin line, running from the apex downwards and inwards towards the second costal cartilage, with a convexity outwards and a very small, dense, pea-like shadow at the lower end of the line. The linear shadow is thrown by the four-layered septum and the mass at the lower end by the cross-section of the vena azygos; the latter may be comma-, bean-, or diamond-shaped. If the patient is turned to right or left the line becomes indistinct and disappears. The shadow does not move on coughing and its size is very variable, according to the size of the lobe. The pea-like shadow shown by the vein may be absent or difficult to define when it is close to hilar shadows or to mottling.

Frequency.

In the anatomical section 31 post-mortem cases were traced in the literature. In the appended table are analysed the figures given by authors since 1927 in their reports on cases recognised radiologically.

Author.	Cases.	Films examined.	Per-centage.
Velde	5	Not stated.	—
Hjelm and Hultén ..	13	3,000	0·43
Mather and Coope*	5	3,000	0·16
Suess	1	120	0·83
Litten[7]	6	8,000 (1½ years).	0·07
Stoloff[10]	6 (children).	Not stated.	—
Leeser	12	,, ,,	—
Illig[4]	"at least" 1	17,000 (7 years).	—
,, ...	12	1 year (1928).	—
Keijser[5]	10	3,500	0·28
Minehart[9]	13	About 10,000.	0·13
Wessler and Bendick	"About" 50.	15 years.	—
Bársony and Koppenstein[1] ..	Not stated.	Not stated.	
Cited by Hänish ..	11	,, ,,	—
above Révész ..	5	,, ,,	—

* 3271 films examined, but in 271 there was extensive mottling in the upper lobe and they were therefore excluded.

It is thus difficult to estimate the frequency of the condition, but it is obviously rare.

Pathology.

The azygos lobe is liable to the same pathological changes as other parts of the lung. A very small lobe may be due to atelectasis. H. Müller[20] reported a case in which pressure from a mass of leukæmic glands caused marked bronchiectasis of the whole azygos lobe; Keijser mentions one of tuberculous infiltration in the azygos lobe only. Other cases recorded have shown effusion in the fissure and infiltration of the lobe.

The shadow may be confused with normal lung markings, local pleural thickening or a fibrous band in the lung. The shadow of the vein may be mistaken for a hilar node or a node resulting from fibrosed infiltration. If the parenchyma does not "light up" well there may be difficulty in distinguishing an azygos lobe from widening of the mediastinum due to tuberculous adenitis (especially in children), tumour, dermoid, persistent thymus or retro-sternal goitre, or even idiopathic dilatation of the œsophagus.[1]

ILLUSTRATIVE CASE.

The following case is of particular interest as it shows a pathological thickening of the azygos septum.

A girl, aged 16, was admitted to the North Wales Sanatorium on Jan. 24th, 1930. She had had measles at the age of 10 and "flu" at the age of 13. A sister had died of pulmonary tuberculosis in January, 1929. The patient, who had lived with the sister in the same house during the whole of the latter's illness, had been quite well until January, 1929, when she had a "nervous breakdown." She "did not look well" and lost weight. There was no cough. She remained away from school for three months; improved considerably, and returned to school until August, 1929. She remained well, and in October decided to begin work. Her doctor (who had "kept an eye on her ever since her sister died") examined her and said that she was "not strong enough." She was referred to the tuberculosis officer.

FIG. 2.

Skiagram showing the shadow in the chest.

There were no symptoms on admission. Examination showed poor muscular development, a well-compensated mitral lesion and a very few localised post-tussic râles posteriorly at the level of the spine of the right scapula. Otherwise the clinical examination was completely negative. There was no history of rheumatic fever, growing pains, or recurrent tonsillitis, but the history of "influenza" three years before was indefinite.

A film of the chest showed the shadow seen in Fig. 2. The position conforms with the description of the azygos fissure. On screening the patient and turning her sideways, the shadow disappeared. It will be seen that the shadow is not finely linear but irregularly thickened. The triangular meso-azygos is well seen. The shadow of the azygos vein is not visible, but the thickening of the whole septum may explain its absence.

One is tempted to suggest that the illness following her sister's death was associated with an infection (? tubercle) in the region of the azygos fissure and that what is seen now is the remains of that process.

I am indebted to Dr. D. A. Powell, principal medical officer, King Edward VII. Welsh National Memorial Association, and to Dr. D. W. Fenwick Jones, medical superintendent, North Wales Sanatorium, for permission to publish the notes and X ray photograph of the case.

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(*Continued at foot of opposite page.*)

CLINICAL AND LABORATORY NOTES

THE UREA CONTENT OF THE CEREBRO-SPINAL FLUID IN STATUS EPILEPTICUS.

A NOTE ON FOUR CASES.

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THE following are notes of four cases observed during status epilepticus.

CASE 1, a female, aged 13½ years, had a family history of "eccentricity" on the father's side. Her elder sister was an epileptic. She had had scarlet fever when aged 8 and her first fit when aged 10, and had had major fits, "absences" and periods of severe mental abnormality. When admitted to Lingfield in August, 1927, she was aged 10½ and had no sign of organic disease in the central nervous system or elsewhere. During the first two months after admission she had frequent attacks, both major and minor, often followed by very abnormal mental conditions. With grs. 30 of bromide daily, the attacks settled down to two majors a month and a few momentary "absences"; there was corresponding mental improvement and the intelligence quotient rose from 74 to 85.

Early in June, 1930, she complained of a cough and looked ill. She had lost 12 lb. in a month. There were no signs in the chest, but she ate little and seemed to lose interest in everything. She complained of headache and giddiness. All reflexes were normal and equal; the pupils were equal and reacted to light. Ophthalmoscopy showed the left disc rather redder than the right, but nothing else abnormal. The urine contained no sugar or albumin. On June 12th pyrexia appeared, and the temperature rose steadily until the night of the 17th, when it was 105·4°, just before death. The pulse-rate rose with the temperature from 120 to 160, and the respirations, which were shallow and irregular throughout, from 28 to 60 and over. During this period the patient was mostly comatose, but at times there was some degree of consciousness, and she was capable of slight response. The limbs were flaccid and the tendon reflexes absent, but there was a good deal of twitching of the eyelids and face muscles, and occasionally of the limbs. Oscillatory eye movements were almost continuous. Urine was passed at regular intervals throughout. During the last 24 hours there were signs of œdema of the lungs.

Permission was not obtained for a post-mortem. Lumbar puncture on June 17th gave a clear fluid under normal pressure. There was no increase in cells, and no organisms were seen in direct films. Cultures were sterile on all media. The fluid showed an increase in the urea and glucose contents:—

Protein	15 mg. per 100 c.cm.
Chlorides	725 " " " "
Urea	70 " " " "
Glucose	127 " " " "

CASE 2, a male, aged 7 years and 11 months, did not walk or talk until he was 2 years old. He had measles when aged 4 years. His first fit at 6½ may have been caused by fright. Besides frequent isolated attacks, he had five attacks in which convulsions continued for several hours. He was treated with gr. 1 of luminal and grs. 8 of bromide a day, but "not much improvement" was reported. On admission on May 22nd, 1930, his general physique was good and nothing abnormal was found in the central nervous system, heart, lungs or kidneys. He was restless, talkative, and mischievous. During the first few weeks he had a few attacks of petit mal.

On June 18th he had very violent major convulsions lasting for 2½ hours. He was treated by repeated enemata, and one dose of luminal sodium, grs. 3, hypodermically. His pulse was rapid and very weak, and his temperature rose to 103·8°. He never completely regained consciousness and died in coma on July 5th—i.e., 17 days later. During the intervening period there was continual pyrexia. For the first four days the temperature averaged 100°; later it was higher, occasionally reaching 103° and rarely dropping below 100°. The pulse-rate ranged from 130 to 160. The respiration-rate varied with the pulse, and only at the very end exceeded 40. Minor attacks varied from slight opening of the mouth, followed by moaning, to rigidity of the right or left arm and leg, accompanied by protrusion of the tongue and dilatation of the pupils. Constant side-to-side movements of the eyes were observed, with occasional fixation to the right, to the left or centrally. In the early stages there was some left internal strabismus. The pupils were equal and reacted to light, and ophthalmoscopy showed nothing abnormal. Except during the attacks, the limbs were flaccid and the tendon reflexes exaggerated and equal. A double extensor plantar response was obtained once after a series of attacks. The bladder emptied itself at intervals and was never unduly distended. A specimen of urine obtained the day before death showed a trace of albumin. At first the patient was able to swallow a little fluid, but later was fed per rectum and then through a nasal catheter. Life was undoubtedly prolonged by strophanthin given hypodermically. Repeated examination of the lungs was negative.

Post-mortem examination.—There was general emaciation, some fluid in both pleuræ, a small infarct in the lower lobe of the right lung, and a small patch of broncho-pneumonia at the left base. The heart-muscle was flabby and rather pale. The liver showed an early nutmeg pattern. The kidneys were normal. A very large amount of fluid escaped on opening the dura. Sections from the cortex of the motor area and cerebellum, and through the pons and medulla, showed no histological abnormality. The cerebro-spinal fluid, taken by lumbar puncture on June 27th—i.e., nine days after the status and eight days before death—showed no raised pressure or cellular increase. The chloride, urea, and glucose contents were increased:—

Protein	15 mg. per 100 c.cm.
Chlorides	936 " " " "
Urea	172 " " " "
Glucose	157 " " " "

CASE 3, a male, aged 35, had his first fit at the age of 8. His father had died of phthisis, his mother of broncho-pneumonia, and both grandfathers of asthma. He was admitted to Lingfield in January, 1906, aged 11. There was then no sign of organic disease in the central nervous system or elsewhere. He was liable to frequent typical major fits, latterly averaging rather over one a week. Usually these occurred singly, but occasionally as many as six were recorded in 24 hours. He took grs. 2 of luminal sodium daily for the last seven years of his life. His general physique was poor and progressive mental deterioration occurred.

On July 20th, 1930, he had 9 major fits; he had 4 more on the 21st, 12 on the 22nd, 37 on the 23rd, and 36 on the 24th. After this, coma alternated with periods of restlessness and shouting, and he died on the 27th. Pyrexia did not begin until after the last fit, but the temperature then rose steadily, reaching a maximum of 108·4° shortly before death. The pulse- and respiration-rates rose with the temperature. There were no localising signs of trouble in the central nervous system. While fits were occurring, a total of 6 c.cm. of somnifaine was given intramuscularly. The bladder emptied itself at intervals throughout, and a specimen of urine towards the end showed a little albumin and some blood.

Post-mortem examination.—The lungs showed congestion and an early stage of pneumonia at both bases. There was no excess of fluid in the brain. The liver showed no histological abnormality, except very slight intercellular fatty degeneration. Both kidneys showed a marked degree of cloudy swelling of the tubules. This was comparatively recent and there was nothing to suggest any form of sub-acute or chronic nephritis. It would, however, account for diminution of function. The Malpighian bodies of

DR. GREGORY KAYNE: REFERENCES.

(*Continued from previous page.*)

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the spleen were much smaller than normal and blurred in outline; in parts they were difficult to distinguish from the splenic pulp. The pulp itself was scattered throughout with recent and old hæmorrhages and also leucocytic infiltration, mainly polynuclear in type. Thrombosis of some of the smaller veins was evident. The endothelial cells lining the pulpar sinuses were scanty and nowhere in proliferation. The fibrous tissue framework of the spleen was normal.

The cortex of the motor areas showed no histological abnormality. Lumbar puncture on July 25th showed a clear fluid under normal pressure, with no cytological or bacteriological abnormality. A marked rise in the glucose and a slight increase in the urea contents were present:—

Protein	..	..	..	20	mg.	per	100 c.cm.
Chlorides	..	..	..	725	,,	,,	,, ,,
Urea..	..	..	..	38·52	,,	,,	,, ,,
Glucose	..	..	..	118	,,	,,	,, ,,

CASE 4, a male, aged 27, had his first fit when aged 7. It was supposed to have followed a shock. He had major attacks every two or three weeks. He was admitted to Lingfield in November, 1921, aged 18. A trace of albumin was present on admission, but otherwise there was no sign of organic disease in the central nervous system or elsewhere. After admission he was subject to a large and increasing number of major and minor attacks and to serial major fits; later, attacks of true status became increasingly common, and he deteriorated mentally and physically.

On August 20th, 1930, he had 46 major fits in a period of two hours, without regaining consciousness. The temperature rose to 101·4° and he was obviously very ill. Treatment consisted of washing out the rectum and the administration of 3¼ c.cm. of somnifaine intramuscularly and grs. 4 of luminal sodium hypodermically. One hour after the fits had stopped lumbar puncture was performed, and a clear fluid obtained, under no great increase of pressure. At the same time a sample of blood was taken from a vein. A high leucocytosis was found:—

Polymorphonuclear leucocytes	..	78	per	cent.
Large lymphocytes	..	..	..	5	,, ,,
Small lymphocytes	..	..	..	5	,, ,,
Hyalines	..	..	..	1	,, ,,
Eosinophils	..	..	..	1	,, ,,
Myelocyte group	..	..	..	10	,, ,,

The blood-urea was 32·74 mg. per 100 c.cm., and the blood-sugar, 0·092 per cent. The cerebro-spinal fluid was clear without clot, there were 2 lymphocytes per c.mm. and no organisms. The urea was a little low:—

Protein	..	..	..	15	mg.	per	100 c.cm.
Chlorides	..	..	..	748·8	,,	,,	,, ,,
Sugar	..	..	..	71·5	,,	,,	,, ,,
Urea..	..	..	..	15·4	,,	,,	,, ,,

DISCUSSION.

The principal interest of these cases is the high urea and glucose content of the cerebro-spinal fluid in the first three. The urea is particularly increased in the first two cases: 70 and 172 mg. per 100 c.cm. There is no reason to suppose that there was a uræmic element and in no instance was there evidence of suppression of urine. Case 3 was a straightforward case of coma following a large number of fits in a very long-standing case of epilepsy. In such a period of coma a terminal pneumonia would be a common event. In Case 2 the epilepsy was of only 18 months' duration and was characterised by periodic severe attacks of status epilepticus; a fatal termination during or following one of these attacks was to be expected. Case 1 is certainly more unusual. The pronounced loss of weight and progressive lack of interest deepening into coma, with rising temperature, pulse- and respiration-rates conform pretty closely to a series of events described by Collier [1] as status epilepticus without the fits, though in this case there was a good deal of intermittent muscle twitching, which was indicative of some active epileptic process.

The three cases in which the urea content was high all ended fatally. The fourth case had a severe status which did not end fatally, and the urea content was normal. One would infer, therefore, that a raised urea content is of grave import.

Laurès and Gascard [2] found a high urea content in cerebro-spinal fluid withdrawn by lumbar puncture immediately after a fit in six cases. Similar estimations made during inter-fit periods gave much lower figures in each of the cases. So far as we know, Laurès and Gascard's work has not been repeated. Patterson and Levi [3] found that the urea content of both blood and cerebro-spinal fluid in epileptics was within normal limits, but no mention is made of the time-relation of their estimations to fits. Goodall [4] found the nitrogen content of both blood and cerebro-spinal fluid a little raised. His cases were on a standard diet, and estimations were made two hours after seizures and during the inter-fit period, but no difference was observed in the figures obtained at these times.

The matter would appear to be one worth further investigation.

We desire to express our thanks to Dr. A. Knyvett Gordon, medical superintendent of the Virol Pathological Research Laboratories, for all the pathological reports on these cases.

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A CASE OF "PERITHELIOMA" OF FASCIAL ORIGIN

WITH A DIRECT ANTECEDENT HISTORY OF TRAUMA.

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THE tumour in this case is interesting because of its unusual histological appearance and because of its close relationship to a previous injury.

The patient, a female, aged 58, attended hospital in September, 1929, complaining of a mass in front of her arm at the level of the elbow-joint.

History.—In May, 1929, the patient was struck by the fall of a clothes airer. A lump appeared immediately after the injury and the patient says it was about the size of a hen's egg. She was able to use the arm, but subsequently consulted a doctor on account of inability to supinate her forearm and a sensation of "pins and needles" in the forearm and hand. She was treated with hot fomentations, but as the lump and symptoms failed to disappear she came to hospital, where the casualty officer incised the mass under the impression that it was an unabsorbed hæmatoma. No fluid of any kind was found and the patient was admitted to the ward.

She was apparently a healthy woman and had not lost weight. In her left arm was a large mass, the size and shape of a pear (base downwards), situated just above and internal to the midpoint of the antecubital fossa. A small line of incision was present and appeared healthy. The mass was movable in the long axis of the limb but firmly fixed to transverse movement. Numbness and anæsthesia were present over the distribution of the ulnar nerve in the hand, and touch was only just perceptible over the median areas. There was marked wasting of the thenar, hypothenar, and interosseous muscles and all finer movements of the hand were grossly limited. She had difficulty in making a fist, and flexion was almost absent in two fingers on the ulnar side. No glands were discoverable in the axilla or root of the neck. Wassermann reaction negative. X ray examination showed a mass with no bony involvement.

On Nov. 28th, 1929, a piece of the mass was removed under general anæsthesia, and examined by frozen section, which showed a mass of fibrous tissue containing a number of islets of actively proliferating cells. A preliminary diagnosis of fibrosarcoma was made and the arm was therefore amputated.

The patient made a good recovery and is till now (October, 1930) without symptoms. The amputated arm was subsequently dissected out by myself, and Mr. Michael Perkins made the accompaning diagram before the parts had been separated for preservation.

The diagram (Fig. 1) is self-explanatory, but the following details must be added: 1. The biceps and triceps muscles adjacent to the tumour were densely

infiltrated by it to a depth of about 2 inches. The brachialis anticus was free. 2. The median nerve passed through the mass and the internal cutaneous nerve divided in it, but both were easily separable and

FIG. 1.

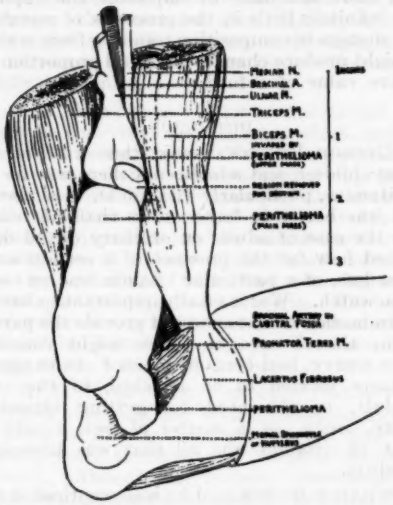


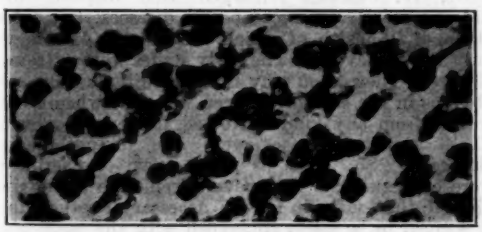
Diagram showing anatomical relationships of tumour.

appeared only to be involved by pressure. 3. The brachial artery and venæ comites, although passing through the tumour, were freely definable on dissection. 4. The mass was readily removed from the underlying bone. From these macroscopic details it would appear that the tumour had its origin in the fascial intermuscular sheaths or septa.

HISTOLOGY.

Varying appearances are presented by adjacent sections—i.e.: 1. One section (Fig. 2) has the appearance of a round-celled sarcoma with no unusual features beyond evidence of great activity. 2. The other section is extremely interesting, for it shows the

FIG. 2.

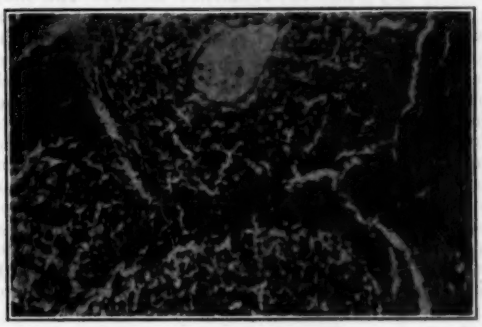


Photomicrograph (high power) showing diffuse sarcomatous area.

remarkable perivascular structure seen in Fig. 3 Here the growth appears lobulated, each entity having a central blood-vessel surrounded by a wide ring of tumour cells. The vessels are more fully formed and appear to be small arteries, and the cells themselves are less embryonic in type in that they are smaller, stain better, and show fewer mitotic figures. The individual lobules are rendered obvious by their envelopment by fibrous tissue and tumour debris. 3. Still another portion of this section shows masses of spindle-shaped cells and seems to be intermediate between these two previous types.

This tumour has been classified as a perithelioma in accordance with current teaching, although on further investigation it seems probable that such a classification rests on very insecure and unscientific foundations. The term "perithelioma" suggests that the condition is in some ways similar to endothelioma—i.e., to postulate "perithelioma" is first to assume perithelium.[1 2 3] Eberth[3] claimed to have demonstrated this tissue in connexion with vessels of the pia mater, but he appears to have failed to convince the sceptical that the appearances he described are not due to perivascular "lymphatics" the existence of which is well known. Roussy,[4 5] in 1911, wrote a long critical review of this subject in connexion with a tumour of the kidney. He states that in his opinion the term "perithelioma" has

FIG. 3.



Photomicrograph (low power) showing peritheliomatous arrangement.

found its way into pathological nomenclature on illegitimate grounds and without adequate investigation. He considers that tumours with such an appearance as this assume it as a result of normal anatomical structure or of peculiarity of their vascular supply, and that a peritheliomatous arrangement is secondary to other factors and not due to a primary origin from unproven perithelium. He classifies tumours of this type under three headings: 1. Cases where the appearance is solely due to normal anatomical structure—e.g., carotid body. 2. Cases due to a neoplasm of the endothelium of perivascular "lymphatics"—e.g., pia mater; for these cases he suggests the title endothelio-lymphangioma." 3. Cases where the appearance is explicable on accidental grounds and is due to hæmorrhage and necrosis emphasising certain areas of growth round the vessels.

For this last type I venture to suggest the expression "perivascular sarcoma"; although this gives a definite indication of the histological appearance, it does not produce confusion regarding the site and mode of origin.

In conclusion, I have to convey my acknowledgements and thanks to Mr. Rock Carling, under whose care the case came, and to Dr. J. A. Braxton Hicks, Director of the John Burford Carlill Laboratories, Westminster Hospital, for permission to use the pathological material.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

AT a meeting of this Section, held on Nov. 28th, with Prof. MAJOR GREENWOOD in the chair, a discussion on

Food as a Preventive of Disease

was opened by Dr. J. M. HAMILL. Well-being, he said, was dependent on two factors, heredity and environment, and of these heredity played a part which was often under-estimated. The most intimate and powerful of all environmental influences was food. By means of proper food an individual's hereditary equipment could be developed to greater advantage than by any other environmental means. The body, when properly fed and well nourished, had extraordinary powers of resistance to disease. The incidence of tuberculosis in a community appeared to be closely correlated with the food-supply, diminishing when the supply was ample, and increasing when the quantity or quality of the diet was inadequate. Troops could withstand great hardships when rations were plentiful and suited to their needs. During the Middle Ages the relationship between famine and pestilence was well understood. It was not a simple matter to say with certainty what was sufficient and suitable food, or when a diet might be regarded as completely satisfactory, but variety of the right kind would, in most cases, go a long way towards ensuring adequacy.

Inadequate diet conduced to maldevelopment and lack of resistance to disease. Specific instances were rickets, defective teeth, scurvy, beri-beri, pellagra, goitre, and a peculiar form of ophthalmia. These diseases were, moreover, only the advanced stages in a long train of disordered metabolic activity which in its earlier stages produced effects so slight as to elude all means of detection at present available. Most of these disorders resulted from deficiencies in the diet, that is, were due to negative factors, but in the production of rickets a positive factor contained in cereals might also play a part. A correct diet depended not only upon the presence of the necessary constituents, but upon their proper balance; adequacy in respect of one essential constituent might be converted into inadequacy when the balance in respect of some other constituents of the diet was altered. It was possible, however, to ensure a satisfactory diet for all practical purposes by relatively simple means if certain foods such as milk and green vegetables were prominent.

Another aspect of nutrition was the damage which might be done to important constituents of food as a result of processes which food might undergo in its preparation for consumption. An obvious example was the destruction of the antiscorbutic vitamin by drying or heating. Another instance might be the destruction of the colouring matter of flour by bleaching. This colouring matter was carotene, which would seem to be a precursor of vitamin A, and it might be that in certain circumstances the body could rely upon this carotene for an important proportion of its vitamin-A supply. The treatment of fruit by hydrogen cyanide for the destruction of insect life exerted an inimical effect upon the living cells of the fruit, and impairment of nutritive value could not be said to be excluded. Biological research tended more and more to emphasise the importance of the infinitely little in the processes of metabolism. Slight changes in composition resulting from manipulation might produce changes out of all proportion in the nutritive value of a food.

DISCUSSION.

Sir GEORGE BUCHANAN said that with regard to growing children and adolescents there was no doubt that vitamins, particularly vitamin D, were necessary, and it was better to have excess than not enough; but in the case of adults on ordinary mixed diet, he wondered how far the presence of a certain amount, more or less, of a particular vitamin was an essential thing to watch. Was it vitally important to have such a discrimination of diet as would provide the particular vitamins the absence of which might conceivably produce scurvy, beri-beri, or rickets? An exaggerated importance seemed to be attached, in the case of the adult, to the need for getting vitamins in quantity, when, as a matter of fact, a very small amount of vitamin was all that was necessary to metabolism.

Sir WILLIAM HAMER said he was sceptical of a good deal of the work on vitamins until the experience of the war. That experience was very arresting. The ordinary members of the public were able in various ways to supplement the strict rations, but the people in institutions who had no such opportunities exhibited various effects of deprivation. In the big fever hospitals it had been the practice for many years to give margarine instead of butter. Ought that to be permitted?

Dr. KINGSTON BARTON said that 50 years ago rickets was regarded as due to excess of starch. All the children suffering from rickets seen in private practice in those days had been stuffed with bread, under-cooked flour, and the various patent foods of the period. Some of the physicians in those days showed that starch if boiled, cooked, or converted into dextrin could be made much less harmful for children.

Dr. W. CRAMER remarked that deficient diets did not merely produce specific diseases, but a long chain of ill-health of which the specific disease was only the last event. The early stages were extremely elusive. The reason why these conditions were more obvious in the case of children was that when a child was ill from any kind of disease it stopped growing. These specific diseases were due to pathological changes. So far as his own experiments were concerned he had never been able to convince himself that vitamin D was necessary for the adult; it seemed to be solely concerned with the ossification of bone.

Dr. THOMAS CARNWATH said that the main result of modern scientific research into matters of food had been to justify traditional practice. He recalled, in his own early days in the west of Ireland, seeing the labourers whose normal diet consisted of potatoes, butter-milk, and perhaps sometimes a little tea and pork, but they were fine strapping fellows nevertheless. When, however, they came over to help in the English harvest they were overfed with protein, and it took them a couple of months to recover. The conditions of life, Dr. Carnwath added, were becoming more and

more artificial, and the question was whether the community was modifying its dietetic habits to correct the evils inherent in these changes. It was there, perhaps, that the scientific man could give assistance. It was only by careful and intensive investigation of diets that it was possible to ascertain what the food habits of different sections of the people were, and in what respect they were defective; having ascertained that, it might be possible to graft on the slight modifications necessary to bring them into conformity with scientific principles.

Dr. S. A. MONCKTON COPEMAN commented on the changes in the views on dietetics which had taken place within recent times. Was it not possible that there were one or two other factors of importance in addition to vitamins, for example, the æsthetics of nutrition? There was not the slightest doubt that if a person enjoyed his food he was all the more likely to benefit from it. Many of the diseases of adult life might be connected with the over-ingestion of vitamins, particularly of animal origin. The consumption of watercress, which contained various vitamins, was urged by Xenophon upon the Persians—another instance of the wisdom of the past.

Dr. H. C. CORRY MANN thought that in the past insufficient attention had been directed to diet in the prevention of disease. He pointed out how greatly of recent years the health of London children had improved, although the housing conditions in the London slums remained the same. Two food modifications had been responsible for this betterment—namely, the use of pasteurised milk, and the fact that there was now available a large supply of fruit, such as the orange and the apple, throughout the year. Summer diarrhœa and abdominal tuberculosis had almost disappeared. He advocated strongly the pasteurisation of milk. If pasteurisation were properly performed, scurvy would not be seen, and there would be a normal increase of growth rate. He also stressed the importance of water. He believed water to be very important because it allowed the necessary alkaline basis to be kept in suspension in the tissue fluids.

Dr. H. S. STANNUS said that in many of the so-called deficiency diseases the symptoms were positive, not negative; they were produced by the presence of something, not by the absence of something else. He was convinced that pellagra was not a deficiency disease. It was due to the action of a toxin, and was unmasked in the absence of the vitamin. The same was true, he believed, of rickets and of beri-beri.

Fleet-Surgeon W. E. HOME referred to the recent publication in Germany of some research carried out in Hamburg, where it was found that the diet of many of the working people was poor in the winter, and especially towards the end of the winter. The death-rate had two maximums, one in December and one in March. It had also been established that infectious diseases were less likely to occur in the families of people who had gardens.

Dr. J. D. ROLLESTON remarked on the absence of any authoritative information as to the vitamin content of wine and alcoholic liquors of which so much was made.

The PRESIDENT, in summing up, said that in a country like this, which was not self-supporting, and would starve on its own resources in a short while, we did not receive the food we liked, but the food we were forced to purchase through existing commercial conditions.

SECTION OF ORTHOPÆDICS.

AT a meeting of this Section held on Dec. 2nd the chair was taken by the President, Mr. P. JENNER VERRALL. Dr. L. BÖHLER spoke on the treatment in Vienna of

Fractures of the Upper Extremity.

He showed slides and cinematograph films illustrating his methods. He recommended local anæsthesia for all fractures; it was particularly valuable in compound fractures. It was sufficient to inject 20 c.cm. of 2 per cent. novocain into the hæmatoma, as this spread the anæsthetic into all the tissues. He had injected over 5000 cases and had never seen infection. The anæsthesia lasted about two hours, thus allowing for a second reduction and fixation if the first proved unsatisfactory under X rays; if necessary the injection could be repeated. Dr. Böhler also recommended Cramer's wire splinting for most cases. It formed the basis of the "aeroplane" splint for fracture of the middle third of the humerus. This was very difficult to fix, but when it was properly fixed the patient was free from pain and could wear it for six or eight weeks. It could not be applied satisfactorily under general anæsthesia. After two weeks the patient could use his hand and forearm and even move his shoulder muscles, while still on the splint, and after ten weeks recovery would be complete.

Fractures of the lower third of the humerus showed angulation and overlap. If the overlap was not reduced by traction there was a risk of nipping the brachial artery between the upper fragment and the coronoid process. Supination always increased the angulation, and the result might be musculo-spiral palsy, but pronation corrected it. The arm was therefore put up in plaster in right-angled flexion and pronation, and then fixed in an aeroplane splint with an extension device. After ten weeks all joints would be free and the muscles strong. The aeroplane splint was also the best application for fracture of the neck of the scapula.

For fracture of the clavicle he used an apparatus which held the arm away from the chest by an axillary pad, but did not press the elbow to the chest—a practice which brought a danger of pressure on vessels or nerves. This apparatus left the arm quite free, and overcame the difficulty of keeping the fragments reduced while healing took place. Recovery was complete in four weeks. If there was a recalcitrant middle fragment a secondary shoulder strap could be used to hold it in place. Even fracture-dislocation of the shoulder-joint should be treated by closed methods. Dr. Böhler demonstrated how the head could be reduced by alternate lateral pulling and upward pushing; the arm was then treated on an aeroplane splint with extension.

In myositis ossificans it was important, he said, not to operate too early, and the bone must be removed together with its periosteum.

THE FOREARM AND HAND.

For the reduction of severe forearm fractures, with both bones broken and displaced, the brachial plexus should be injected with novocain. Counter-extension was obtained by passing a loop of webbing round the upper arm, blocking the loop open to prevent pressure on the limb, and fastening its ends to the wall or door-handle. The fingers were then painted with mastisol and covered with a light gauze bandage. On this an assistant took his grip and exerted a very strong slow pull. When reduction was effected

rustless wire was drilled through both bones at their upper and lower ends—still under traction—and the arm was put up in plaster, flexed and pronated. Small volar and dorsal rods were placed in the interosseous space, and after the application of the circular bandage these were pressed home. Small lock screws in the plaster held the wires, and the arm was put on an aeroplane splint for two or three days to prevent circulatory disturbances. In more than 40 cases Dr. Böhler had seen no infection; he also used this wire-drilling method for complicated fractures of the carpus and lower end of the forearm. It was important to remember, he said, that bony union never occurred, in complete transverse fractures with displacement, in less than eight weeks. His method of treating pseudarthrosis was by drilling grooves at the ends of the bones; it differed from the similar process described in the *British Journal of Surgery* in 1914 in that the drilling was usually done subcutaneously.

For difficult fractures of the lower end of the radius a similar method was used; it was very important that the assistant should maintain continuous traction while the fixation was applied, and that he should have something against which to brace his foot so that it did not slip. For simple Colles's fracture only gauze bandaging and a splint were used. Active movements began as soon as the cast was set, even after very severe injuries; patients could dress themselves, make their beds, knit, and cook three days after the injury, and these natural activities had great therapeutic value. Two weeks after removal of the splint recovery should be perfect.

A fracture of the little finger (first phalanx) was put up in a U-shaped wire splint fastened to the wrist by plaster; the finger was attached to the wire in hyperextension by adhesive strapping, and the fracture reduced by gradual bending of the wire. Fractures of the scaphoid always united if properly fixed for an adequate period—six weeks. These injuries were seldom fixed for sufficient periods. Often the central fragment was deprived of its circulation by the fracture, and the re-establishment of its blood supply sometimes demanded months of fixation, but the patient could go on working during this time if his hand was in plaster in slight dorsiflexion. Every time he closed his fingers he axially compressed the scaphoid, which helped the treatment. Dr. Böhler never removed the scaphoid, as the function of the hand did not seem to be much improved by operation. Dislocation of the semilunar bone could be reduced by strong traction in recent cases, but older cases could be treated in an extension apparatus with pins through forearm and metacarpus. In these old cases the gap which the semilunar should occupy closed up and must be re-opened. Similar methods were applied to other dislocations round the wrist. Compound fractures of the fingers were treated by closure of the skin only and a wire extension on the uncovered finger; exposure to air prevented maceration and infection, the serum and blood forming a dry crust which protected the skin. If a dressing were put on the serum and blood soaked it, infection followed.

DISCUSSION.

Mr. E. G. SLESINGER mentioned the heavily-infected compound fracture when it came too late for primary suture. He had found in Gallipoli that the more maggots there were in a wound the better the end result, and that Dakin's solution dissolved protein. Nature's method was to supply maggots to eat the dead tissue, and the deliberate use of her method had given good results. After four days the maggots could be gently scraped away from a clean granulating wound.

Mr. C. H. BROOMHEAD said that teamwork was the secret of Dr. Böhler's success, and we had much to learn from him. The position he used for fractures of the humerus was a great advance. He asked how to treat separated epiphysis. He thought the mental state of the patient covered with maggots was regrettable. Dr. Böhler had not a masseur in his clinic; often the injudicious masseur did more harm than good. The patient was the best indicator of the movements suitable for him.

Mr. J. P. HOSFORD said that what had most impressed him in Dr. Böhler's clinic was the absence of general anæsthesia and of massage. He had seen remarkable results with local anæsthesia. Early movement saved subsequent stiffness, but was only possible with a perfectly fitting splint. He had given up massage for fractures of the upper end of the humerus and lower end of the radius, allowing the patient to move about in a plaster cast. It was remarkable what good movements could be obtained.

Mr. MCCRAE AITKIN regretted the absence of Sir Robert Jones, who had long ago preached length and continuity of treatment. As Dr. Böhler had said, true principles never changed, but each man made his own technique.

Mr. G. R. GIRDLESTONE asked if the hairs came off with the plaster.

Mr. W. H. OGILVIE asked how long after the fracture local anæsthesia was possible, and how the plaster was removed.

Dr. BÖHLER, in reply, said that wounds could only be closed within the first six hours after fracture. The great feature of treatment was uninterrupted rest. He had had the same experience with maggots, and had seen wonderful results from their use in osteomyelitis in childhood. Reduction of the epiphysis was not difficult, but traction must be combined with bending movement. Simple local anæsthesia could be used as long as there was a hæmatoma, sometimes as long as two weeks after injury, but when the hæmatoma had gone infiltration could be used. He never shaved or anointed the skin, because the hairs gave the plaster good fixation and did not hurt when they were all pulled on together. When it was removed four or six weeks later new hairs had grown and were therefore not incorporated in the cast.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution on Nov. 20th Dr. L. J. PICTON read a paper on

Amylaceous Dyspepsia.

In this condition, he said, dyspepsia was noticed to follow starchy meals. A starch-eating habit was recognised, and cure followed abandonment of the habit. The form of starch was important; unburst granules, such as those in the gluten framework of the bread sponge, were insusceptible to the influence of ptyalin. Slimy gastritis might be caused by excessive, especially unburst, starch as well as by infective catarrh. Delay might be caused not only by slimy gastritis, but also, normally, by eating starch and meat together (Pavlov) as in the conventional dietary. The satiety necessary for the tranquility of the stomach could be achieved by taking meat and greens. An equal filling of starch and meat involved unnecessary digestive labours as well as delay, but

greens passed quickly (Beaumont, 1833). Ptyalin digestion in the mouth and stomach "hopper" might start the cycle of digestive preparation. Dr. Picton described a peristaltic and metabolic "gradient" (Alvarez), and discussed the site of its pacemaker. He suggested that the pacemaker could be inhibited by sensitisation and toxic influences—e.g., excess of starch. Symptoms were due to delay, constipation, and peristalsis in the wrong direction to an abnormal degree through flattening or reversal of the gradient. He advocated starch at one meal, meat and greens at another, in dyspepsia.

Ramisection for Hirschsprung's Disease.

Mr. J. B. OLDHAM reported two cases of Hirschsprung's disease on which lumbar sympathetic ganglionectomy and ramisection had been performed two years ago with excellent results. In the first case a girl, aged 4, whose bowels were only opened every 3–14 days in spite of prolonged medical treatment, had the left second, third, and fourth lumbar ganglia, with their rami and the intervening cord, removed, and since then the bowels had acted daily without the aid of drugs. The second patient had been attending hospital regularly for 11 years. Her bowels acted very irregularly. She frequently had to be admitted to hospital with attacks of acute obstruction. On many occasions fæcoliths 4–7 inches in diameter had to be removed, and she had undergone colotomy, coloplication, colostomy, entero-anastomosis, and partial colectomy, but the condition always recurred. After bilateral lumbar sympathetic ganglionectomy and ramisection the bowels had continued to move regularly every day without the aid of drugs or diet. Mr. Oldham described the technique of the abdominal approach to the sympathetic chain, and recommended spinal anæsthesia. He also gave an account of the varying forms of surgical and medical treatment that had been tried from time to time and the unsatisfactory results they had produced. The similarity between Hirschsprung's disease, cardiospasm, congenital pyloric stenosis, and hypertrophic ileal obstruction was described, together with the physiological basis for the hypothesis that all these conditions were due to a hyperactivity, real or comparative, of the sympathetic nervous system. Mr. Oldham suggested that the excellent results obtained by sympathectomy in Hirschsprung's disease gave proof of the truth of this hypothesis.

Dr. C. ALLAN BIRCH said he was interested in lumbar sympathetic ganglionectomy for peripheral vascular diseases, and asked whether this operation ever produced any effect on previously normal bowel movements.

Dr. NORMAN CAPON remarked that earlier diagnosis of the condition was desirable, and pointed out that in the young baby abdominal distension was by no means invariable. It was noteworthy that at least one case had been reported in which severe vomiting and constipation had led to a mistaken diagnosis of congenital pyloric stenosis.

Mr. PHILIP HAWE said that it seemed clear that sympathetic resection should have much more chance of success in conditions such as dilatation of the colon, in which sympathetic hypertonia was probably to blame, than in the treatment of spastic paralysis where the underlying physiological principles were far from clear. There was some reason to expect that this operation would be extended to conditions of intestinal disorder other than Hirschsprung's disease. He had been associated with Mr. K. W. Monsarrat in a case of advanced colonic stasis which resisted medical treatment for years but responded in a most convincing way to a lumbar sympathetic ramisection.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

A MEETING of this Section was held on Nov. 14th, with Dr. H. F. MOORE, the President, in the chair.

Diabetes with Phthisis.

Dr. JOHN LAIT showed a case of diabetes mellitus complicated by phthisis, and read a note on the condition.

The patient, a girl aged 14, had apparently suffered from untreated diabetes for over six months before entering hospital. Soon after admission she developed pyrexia and a cough. Radiographic examination showed early cavitation of the left lung in two places, and the sputum contained tubercle bacilli. She had an acute and rapidly progressive tuberculosis, and the general condition was becoming gradually worse in spite of careful treatment of the diabetes. Dr. Lait induced artificial pneumothorax on the affected side, and though at first, owing to adhesions, he did not get complete collapse, the child at once began to improve. The pyrexia stopped, the cough and sputum disappeared, and the weight began to increase.

In order to collapse the lung, said Dr. Lait, he had found it necessary to use a high pressure of air in the pleural cavity so as to stretch the recently formed adhesions. In this he was almost completely successful, for the child stood these high pressures (about 20 cm. water) extremely well, and now (about five months after induction) the left lung was almost completely collapsed. Recently a small pleural effusion had appeared on the collapsed side; this did not seem to do any harm or occasion any discomfort, and might possibly be looked on as assisting the treatment. The diabetic status was excellent, the patient's weight being steadily on the increase.

The PRESIDENT said that in 1914, when Allen was working out the dietetic treatment of diabetes, Joslin noticed that in diabetic patients who developed tuberculosis and lost weight the diabetes improved, and there was sometimes a great increase of the glucose tolerance.

Dr. E. T. FREEMAN, referring to artificial pneumothorax, said that it was remarkable to find a patient as young as Dr. Lait's standing such a high pressure especially on the left side. It was very unusual to get such a high pressure without any movement of the mediastinum. He thought that if the effusion could be increased in size and brought up to the level of the cavity in the lung, it would be a great safeguard against rupture of the cavity. If it was intended to maintain the pressure, yet avoid rupture, it would be better to withdraw fluid and put in air.

Treatment of Polycythæmia Vera Rubra.

Dr. CYRIL MURPHY showed and described the following case:—

A man, aged 51, a cooper, complained at various times since April 1922, of inflammation of joints, and latterly of pain in the left upper portion of his abdomen; also of headache, lightness of the head, and vomiting on one occasion. Late in 1923 Dr. Murphy examined him, and found that the lips, the lobes of ears, and the finger-tips were cerise-coloured and the cornea purplish. The venules of the face seemed engorged—a feature still noticeable. The spleen extended four fingers' breadth below the left costal margin, and was very tender. The left knee subsequently became swollen in a spindle-shape, while the veins of the leg stood out in relief, and flush over the left knee became almost cyanotic. He was intensely feverish for about 14 days, and

the fever was not influenced by salicylates. Other joints, particularly of the great toes and wrists, were subsequently involved and were just as resistant to treatment. The arthritis was now the most absorbing symptom.

Subsequent examination of the blood showed a negative Wassermann reaction, and a red cell count of over 11 millions per c.mm. Later counts were (1925) 9 millions, with 30,000 leucocytes, and (1927) 8 millions with hæmoglobin 125 per cent.

Many methods of treatment were tried, chief among them benzol, and various anodynes which were of no value. Later, sodium carbonate was given in 10-grain doses three times a day in an attempt to diminish the acidity of the blood, which some members of the French school at this time thought was increased in this condition. This treatment seemed to give some relief, and in the course of a year lowered the blood count by one million. X rays to the long bones seemed to aggravate the symptoms, so this form of treatment was early discarded. Venesection, too, was abandoned as being of very temporary benefit.

Since seeing a number of cases of Vaquez's disease treated at the Mayo Clinic by ingestion of phenylhydrazine hydrochloride, Dr. Murphy had used this drug in the present case, he said, for 13 months, during which the patient took 0·1 g. per week. The spleen was still enlarged and tender, and there was still—though to a very slight extent—some of the characteristic cerise hue noticeable on the lips. The blood pressure, which had been 168 systolic and 97 diastolic, was now 142 systolic and 81 diastolic. The blood count was: red cells 4,500,000; white cells 13,200; hæmoglobin 80 per cent., and colour-index 0·9.

The PRESIDENT said he had not previously known that there was any connexion between arthritis and polycythæmia. He had treated four cases of this disease in the last three years, one woman and three men. They all had splenomegaly and albuminuria, and the typical facies, cerise in colour. The woman, aged 48, was treated with X rays applied to the bones, but with very little benefit. Phenylhydrazine was tried, and reduced the red blood cell count and the hæmoglobin, and it was found that 0·1 g. of the drug daily was sufficient to keep the blood normal. One man, aged 42, was given phenylhydrazine, but with very little result. Next a course of X rays was tried, also with little result, and then the phenylhydrazine was tried again. After about four weeks' treatment he began to improve, and it was now found that 0·1 g. every 7 to 10 days was enough to keep the blood approximately normal. The second man, aged 44, had apparently had an attack of thromboangiitis obliterans in the left radial artery. This condition had been described as a complication of polycythæmia, but was supposed to be very rare. This patient had a course of X ray treatment for three months, but the result, as far as the blood was concerned, was absolutely negative. He was now having phenylhydrazine, and was improving. The fourth patient, a man aged 55, had had phenylhydrazine for two months, but with no result. He was now having X ray treatment. Dr. Moore thought that in these cases X rays made the bone-marrow more vulnerable to the action of phenylhydrazine.

Dr. MURPHY, replying, said he thought there must be some connexion between polycythæmia and arthritis, for in his case the arthritis improved when the polycythæmia improved.

Diagnosis of Renal Rickets.

Sir WILLIAM WHEELER read notes on two cases suggestive of renal rickets, and showed one patient. The condition, said Sir William, comprised: (1) early renal derangement; (2) infantilism or dwarfism which might be early or only at puberty; and (3) rachitic changes in the bones, generally of the type of adolescent rickets.

In his first case renal rickets was suspected in a child aged 7 owing to the presence of albumin, red blood cells, and casts in the urine, combined with polyuria. There were rachitic changes in the chest and cessation of growth. The child had blue sclerotics, a condition not associated with rickets. Radiographic appearances of the bones were not suggestive of the renal type of rickets, and finally blood examination, reported by Dr. A. G. Thompson, was against the diagnosis. The Wassermann reaction was strongly positive and congenital syphilis probably explained all the phenomena. The albuminuria was intermittent or temporary, for it was not found at a later date.

In the second case the patient suffered from double congenital hydronephrosis. Tests were made with intravenous injections of uroselectan. There was a stone in the left kidney. The stone was removed and the kidney was found atrophied and cystic with a dilated pelvis. The radiologist's report stated that there was pronounced dilatation of the pelvis and calices on the right side, with moderate dilatation on the left which contained the stone. The child had undergone five operations for rachitic deformities.

In this case, said Sir William, the radiographic appearances of the bones approximated to the description of renal rickets given by various writers. After removal of the stone albumin disappeared from the urine but reappeared after an interval. The patient was aged 17, but was only 4 ft. 3 in. in height—no taller than an average child of ten. The prognosis of renal rickets was bad. Antirachitic treatment—e.g., by sunlight and cod-liver oil—was believed by some authorities to precipitate uræmia. Most of the cases recorded had come from English industrial areas.

Dr. A. G. THOMPSON said that four clinical types of rickets, could be distinguished—namely, ordinary infantile rickets, late rickets, and two peculiar types associated with cœliac disease and with renal infantilism. Nearly 90 per cent. of the inorganic matter of the bones of young children consists of tri-calcium phosphate, and if calcium and phosphorus were supplied in adequate amount in the diet good bone was laid down. In infantile rickets there was a negative balance of these elements, as much being excreted as was absorbed. In addition, the blood phosphorus was very low (1–2 mg. per cent.), though the calcium was usually normal. Hence there was an upset of the calcium phosphorus ratio with consequent failure of ossification. This might result from several factors—e.g., faulty diet, lack of vitamin D and sunshine, and bad hygienic conditions. In renal infantilism, though the conditions might be perfect, a peculiar type of rickets often developed. This was due to retention of phosphorus by the damaged kidney with consequent upset of the calcium phosphorus ratio. Dr. Thompson did not think either of Sir William's cases was renal rickets, though both were interesting and obscure examples of infantilism. The first was probably mainly syphilitic, with perhaps a rickety element added. The second might be a case of healed rickets.

Dr. R. E. STEEN said that ordinary rickets was common, late or adolescent rickets was rare, and renal rickets was extremely rare. He mentioned a case of renal rickets which he had seen in Great Ormond-street Hospital, and said that the thing which struck him about it was the marked arteriosclerosis of the vessels. The blood-urea was high, and the blood pressure also was raised.

DERBYSHIRE ROYAL INFIRMARY.—The 121st annual report shows that 6370 patients were admitted during the year; out-patients numbered 13,000, and casualties 14,148—substantial increases in each category. In-patients stayed on an average 17·6 days. There was an increase of more than 16,000 out-patient attendances, the total being just under 176,000. Since 1914 the number of beds has increased from 240 to 346. The income was £51,012 and the expenditure £50,989.

REVIEWS AND NOTICES OF BOOKS

Tuberculosis among Children.

By J. ARTHUR MYERS, Ph.D., M.D., F.A.C.P., Chief of Medical Staff, Leymanhurst School for Tuberculous Children; Associate Professor of Preventive Medicine, University of Minnesota. With chapters by C. A. STEWART, M.D., Ph.D., Assistant Professor of Pediatics at the University; and PAUL W. GIESSLER, M.D., Assistant Professor of Surgery at the University. London: Baillière, Tindall and Cox. 1930. Pp. 208. 16*s*.

THE first part of this book deals with tuberculosis in infancy. Congenital tuberculosis is practically unknown, and the author remarks that tuberculous infection in infancy always results from contact with a person or animal suffering from tuberculosis or acting as a carrier. A higher incidence of disease exists among infants with prolonged exposure to infection, and this incidence is found to vary directly with the opportunities for exposure. A positive intradermal tuberculin test indicates that the child has been infected, whereas a negative one is strong evidence that it has not. The positive test indicates allergy which appears to ebb and flow with the activity or latency of a tuberculous lesion. The author points out that physical signs are usually of no avail and that X ray examination combined with symptoms and history of the case are the most important guides to diagnosis. It is refreshing to read that the prognosis of tuberculosis among infants usually is very good. Children undoubtedly have an excellent resistance to tuberculous infection in spite of the old-fashioned teaching that the disease in childhood is always fatal. In the section dealing with prevention it is stated that the first step is to prevent exposure. If infection has already taken place one should guard against further infection.

In the second part of the book tuberculosis in childhood is discussed, whilst the third part is devoted to tuberculosis in the "teens." There is an interesting chapter on chronic non-tuberculous basal pulmonary disease and another on tuberculosis of the bones, joints, and other sites besides the lungs. At the end of each chapter is an excellent summary, and a full list of references to other authors is included. In an introductory chapter Dr. Allen K. Krause pays tribute to a book which will be of value to all those who are interested in the problem of tuberculosis.

The Diagnosis of Mental Deficiency.

By HENRY HERD, M.A., M.B., Ch.B. Edin., Senior Assistant School Medical Officer, Manchester Education Committee. London: Hodder and Stoughton, Ltd. 1930. Pp. 272. 12*s*. 6*d*.

THIS wise and practical handbook should be in the possession of every school medical officer and teacher, and will be welcomed by all who have to deal with mental defect. Dr. Herd begins by discussing the legal definitions and social implications of mental defect, and then threads his way with a sure step through the difficult maze of psychology and mental development. Without going into technicalities he contrives to explain the light thrown on the subject by psychological conceptions, and to give a general working basis of psychological principles for the student of mental defect. He then goes on to the diagnosis proper, indicating the points which must be obtained from the patient himself and from other people, and finally discussing the various tests, from the Binet-Simon scale and Porteous mazes to temperamental and scholastic tests. His ninth chapter gives a clear outline of the grades of deficiency, and is followed by 24 illustrative cases (which, by a curious misprint, are called "illustrated cases" at the head of each page). His chapter on moral defect discusses this thorny question with common sense, and the remaining chapters deal with legal duties and powers, preliminary selection and treatment, and future developments. Each chapter is supplied with a short bibliography which will enable the interested reader to pursue the subject in greater detail than the scope of this work allows, and an appendix includes forms of report and certificate. The book is attractively produced and pleasantly written. It is illustrated with photographs of half a dozen typical defectives, and a number of drawings by normal and defective children. Dr. Herd is to be congratulated on his success in the task he set himself: "to provide a book midway between the medical and psychological, containing sufficient material from both aspects for the examiner." The Binet-Simon tests are not given in sufficient detail to enable a person who is not familiar with them to use them straight out of this book; but that is a wise precaution, for mental testing should never be learnt exclusively from a book, and the shortened form given here provides a useful reminder for those who are not using the tests every day but have learned how to apply them.

Simple Beginnings in the Training of Mentally Defective Children.

Third (Memorial) edition. By MARGARET MACDOWALL. London: Law and Local Government Publications, Ltd. 1930. Pp. 133. 3*s*. 6*d*.

THE publication of a third edition of Margaret Macdowall's little book on the training of mentally defective children is a fitting memorial of her pioneer work in this special and—at the time of its first issue—little regarded department of education. For her work, of which this book is the record, was her life—no mere occupation in the ordinary sense, but a real vocation to which she felt herself called. Her realisation of her vocation came somewhat suddenly through the presence of an imbecile child in the family with whom she was living, and she gave herself wholeheartedly henceforth to the discovery of methods of training such children and to their practical application. For a time she worked under the guidance of Dr. Shuttleworth at the Royal Albert Institution at Lancaster, and later started a small school at Ealing which ultimately developed into the school at Burgess Hill in Sussex. As is emphasised by both Sir Maurice Craig and Dr. A. F. Tredgold in the introduction to this memorial edition, the keynote to the success of her work was the fact that she made a special study of each child, got into intimate touch with its special abilities and disabilities and its special traits of character, and adapted her training to the individuality she so discovered. Intuitive insight there must have been and was, but it was reinforced by careful observation and thought. Public authorities sent students to study her methods, and thus her ideas and ideals were spread abroad and have become common knowledge to those interested. An integral part of her work was its religious aspect, for it was an essential

tenet of the society under whose auspices she worked that the spiritual side of man's nature must be cultivated as a means to the development of his mental powers, and this belief coloured all her efforts.

The methods of training described in the book are obviously applicable to quite low grades of deficiency, at least as low as the imbecile. Much stress is laid upon detailed method in the training in such elementary acquirements as eating, dressing, sitting, walking, talking, control of even simple movements, muscular balance, cleanly habits, and the conquest of bad automatic habits, such as body rocking and nail-biting. Lessons in simple domestic and industrial processes are given in much detail—a point that makes the book of special value for young and inexperienced teachers and for intelligent parents. The book reveals an intimate knowledge of the special characteristics of mentally defective children, and of the many difficulties that arise in their education. Much of her teaching has become accepted tradition now, but no special school teacher can afford to miss reading it, and even certifying officers will learn much from a careful perusal of its pages. At times her enthusiastic optimism carries her beyond the facts. Of the spastic paralytic type, for example, she remarks that "in most of these cases the ideas are there and also the desire to express them," and that the only obstacle is the "lack of control of muscular energy." Yet one has to recognise that without the idealism which saw visions in advance of possibilities, she would not have done the work she did. The whole book and her whole life is a useful reminder of the necessity for a sympathetic idealism in the training, not only of mental defectives, but also of the many other types of cripples, physical or mental, for whom this humanitarian age loves to provide.

Manual of Physiology

for Students and Practitioners.

Third edition. By H. WILLOUGHBY LYLE, M.D., B.S. Lond., F.R.C.S. Eng.; and DAVID DE SOUZA, M.D., D.Sc., F.R.C.P. Lond. London: Humphrey Milford, Oxford University Press. 1930. Pp. 820. 16*s*.

PRESENT-DAY students of physiology are not a little embarrassed with the array of text-books from which they have to make a choice. The authors of the volume under review have endeavoured to compromise between the classical tome and the ubiquitous "cram" book, and to give their readers a general survey of the subject that is neither too detailed nor unduly condensed. About 40 pages are devoted to chemical physiology, and good use has been made of this space. There follow the usual sections dealing with the different systems and functions of the body. The authors deal cautiously with debatable subjects, and where more than one hypothesis is applicable they endeavour to state the position impartially. A very useful chapter is devoted to diet and food values; and the section dealing with mental physiology gives a good introduction to this branch of the science. The section on sense organs is well presented, especially the portion which explains vision. The eye and its appendages are discussed very fully both from their anatomical and their physiological aspects; this part of the book, comprising fully 60 pages, forms almost a treatise in itself. The authors state that they have endeavoured to indicate the bearing of physiology upon medicine and surgery, but they have obviously been hampered in this design by limitations of space. Nevertheless the busy practitioner will find this volume very useful for revising his knowledge of physiology. There are very few errors of commission, but one can scarcely agree with the inference to be derived from the authors' definition of defibrinated blood that it is composed only of blood serum with oxyhæmoglobin in solution. An illustration is given on page 382 to show the effect of respiration upon the blood pressure. The curve indicates 17 heart beats for one respiratory phase; this can scarcely be looked upon as being physiological. The book bears evidence of having been brought into line with the more important recent advances, although the omission of all reference to Collip's work on the parathyroids is surprising. The volume is well printed and of convenient size.

Clinical Chemistry in Practical Medicine.

By C. P. STEWARD, M.Sc., Ph.D., Lecturer in Biochemistry, University of Edinburgh; and D. M. DUNLOP, B.A., M.D., M.R.C.P., Assistant, Department of Therapeutics, University of Edinburgh. Edinburgh: E. and S. Livingstone. 1930. Pp. 246. 7*s*. 6*d*.

OF recent years several books on clinical biochemistry have been written, and it becomes increasingly difficult to determine which book is suitable for a particular class of worker. The authors have intended this publication to be for the use of the practitioner, the house physician, and the senior student; as they themselves say, "it is not an elaborate text-book of biochemistry for the laboratory worker." The methods for estimating blood constituents, with the exception of urea, are not given in detail, but the interpretation of their results is fully explained. The chapter dealing with gastric analysis is disappointing in view of recent work, and no mention is made of the blood plasma proteins. It is a useful book in many respects, but perhaps too much has been sacrificed for the sake of simplicity and brevity.

Diseases of the Genito-Urinary System in Infancy and Childhood.

By HENRY F. HELMHOLZ, M.D., Professor of Pediatrics, University of Minnesota (the Mayo Foundation); and SAMUEL AMBERG, M.D., Associate Professor of Pediatrics at the University. Supervising Editor: ROYAL STORRS HAYNES, Ph.B., M.D. London: D. Appleton and Co. 1930. Pp. 239.

THIS book forms Vol. XIX. of the Clinical Pediatrics series and is only obtainable with Vol. XX. on Laboratory Pediatrics and Vol. XXI., which contains the composite index and cumulative Supplement at 32*s*. for the three volumes. Vol. XIX. is an account of the genito-urinary diseases as they occur in early life. It comes from the Mayo Clinic, and carries on the tradition of excellent workmanship and full references which we are accustomed to look for in any publication emanating from this clinic. It does not bring forward anything very new, but should prove acceptable to the "general practitioner of medicine" for whom it is intended. The volume contains a series of monographs with illustrative cases, the longest sections being those devoted to the pyogenic infections and to bilateral hæmatogenous renal disease. Enuresis and its treatment are also discussed in full detail. Sections on embryology and methods of diagnosis are included, and the authors give some very useful tables of diet for children of varying ages.

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THE LANCET.

LONDON: SATURDAY, DECEMBER 6, 1930.

THE SIGNIFICANCE OF FALSE WITNESS.

THE Maudsley Lecture, delivered by Mr. Justice MCCARDIE before the Royal Medico-Psychological Association on Nov. 20th, has received attention from the press and called forth a question in Parliament. Handled by one whose task for years has been to extract from specific tangles a specific answer to the problem of what really happened, the subject of "Truth" made a wide appeal, and the lecturer's definition of truth as "conformity to fact and reality" seems straightforward enough to be accepted by everyone. But recent philosophical conceptions have made unstable some of our beliefs in fact and reality; illusion, misinterpretation, and imperfect observation have been subjects of laboratory experiment, and the part they play in affecting those beliefs and in vitiating evidence is becoming better known. Instead of being a common gift of mankind, the power of accurate observation and description is so rare that its possessor stands out above his fellows, and the deliberate cultivation of such power is a first essential in scientific training. We are confused, too, by the ascription to truth of two different qualities—accuracy and honesty; besides measuring it by the objective standard of reality we apply to it a subjective standard of morality. "Mistaken but honest" as applied to a witness expresses these two standards, and the common situation thus summed up is scarcely covered by Sir HENRY MCCARDIE'S list of the three major enemies of truth—lack of courage, self-interest, and bias—unless we take bias in a very general sense. He noted that the psychology of bias had yet to be fully revealed, and asked whether we perceived the foes of truth who might be lurking in our own minds and instincts. The psychologist might answer that bias in all its forms, especially bias due to unconscious mental processes, has been the special study of psychology; indeed, it is laid to the psychologist's charge that by his emphasis upon unconscious bias he has dethroned reason and undermined personal responsibility.

A superficial or naked-eye psychology suffices for the understanding of a great deal of false witness, such as that form of perjury so common since permission to give evidence has practically compelled the accused to enter the box. False witness due to our weak powers of observation, or to the partisanship inseparable from our methods of legal advocacy, is less obvious though easily recognised when its mechanisms are borne in mind. There is other false witness in which a naked-eye psychology goes woefully astray, as in the case commented upon in our columns some weeks ago[1] in which a youth made against himself a false accusation of murder, was released as a mischievous liar, and subsequently confirmed the suspicion of mental disorder by attempting arson. The problem of motive in such cases can be solved only by a technique of mental exploration, and the same method is called for in some of the cases referred to by Sir HENRY MCCARDIE in which children or girls gave false evidence against men charged with sexual offences. Here the corroboration of false evidence sometimes suggests folie à deux. Short of such extreme cases there are certainly others where the source of the impulse to testify falsely is recognised dimly or not at all by the witness and in which the facile explanation of hard lying is inadequate. Sir HENRY expressed a hope that psychologists would give attention to the problem of truth-finding in open court; but the open court gives little opportunity for direct psychological aid in that respect, and anything but open methods is against the spirit of our law. The word-association test, for example, would be rejected as savouring of the so-called third degree. Naked-eye psychology must at present suffice to sort out facts from a tangle of evidence, and whoever has sat for an hour or two in a Metropolitan police-court must admire the skill of an experienced magistrate in performing his task. Yet the cases are common in which deeper knowledge can reveal the significance of evidence or conduct that would otherwise escape attention and can aid in a fuller understanding both of the evidence and the facts. Mr. Justice EVE took the occasion of the anniversary dinner of the Royal Society, on Dec. 1st, to dissociate himself from his learned brother's view as to the increase of perjury in law courts, but the divergence of opinion may well be explained by the fact that the dissentients were not agreed upon definitions.

PHYSICS AND PHYSIC.

BY the beneficence of Mr. ELDRIDGE R. JOHNSON an institute for medical physics has been founded in the medical school of the University of Pennsylvania. Its object is not, as might be supposed, to exploit the methods and results of massage, hydrotherapy, gymnastics, radiation treatment, and the like, but to see how far modern experimental philosophy can aid in the understanding of life and disease. The purpose of the Foundation is to interpret pathological and normal biological phenomena in terms of physics, and to investigate them along physical lines; it is also anticipated that considerable use will be found in having a body of trained physicists available to solve specific physical problems with which the clinician meets in the wards or in his research. All this is, we believe, quite a fresh departure in a medical school, and raises many interesting considerations, some of which are dealt with in a stimulating address[2] given by Prof. A. V. HILL at the inauguration

[1] THE LANCET, Oct. 11th, p. 810.
[2] Jour. Amer. Med. Assoc., Nov. 8th, p. 1393.

ceremony. On one point Prof. HILL is explicitly clear; he does not believe that the phenomena of life can be explained in terms of the physics and chemistry of to-day. What the future will produce, no one can tell. But for the present he insists that in the organism as a whole we have a phenomenon of a special kind, whose unity and uniqueness are as essential as any of the concepts of physics. He sees, however, that there are considerable difficulties in subjecting the organism as a whole to experimental analysis, and he urged upon his audience the notion that the best way of investigating the organism is the way provided by the ideas and technique of physics. No one will doubt the universal value of precise measurement in all branches of natural science, and his own distinguished contributions to knowledge are sufficient evidence in favour of Prof. HILL'S thesis that physics is at least one of several good methods of examining live organisms, so long as the examiner is a real physicist and not a physicist ad hoc.

All engaged in scientific pursuits will support the proposal that work should be encouraged in the fields that lie between the main territories into which science is arbitrarily divided. The increasing mass of knowledge makes it impossible for any one mind to include the whole; it is becoming increasingly difficult for anyone to be acquainted with the whole of one department. Most workers perforce keep within some limited field. And yet there must be continual overlap if the best results are to be obtained, and there are evidently considerable advantages to be looked for if occasionally the chemist will become a bacteriologist or the zoologist a morbid anatomist or, as in the present instance, a physicist an applied physiologist. Prof. HILL also draws attention to one curiosity of university education which must surely considerably hamper this transference and coöperation. Every student of biology is compelled to acquire some elementary knowledge of chemistry and physics. But students whose main interest is in chemistry and physics are allowed to go through their whole curriculum with nothing else than mathematics; this course may produce excellent physicists, but it leads to a sadly uneducated view of the real world and to an amazing ignorance of what biology is about. Surely it would be to everyone's good that an elementary acquaintance with biology should be demanded of every serious student of natural science. Advances in physiology and medicine may come from anywhere; they have, in fact, come from the most unexpected sources, and we believe with Prof. HILL that almost any sort of curiosity has its clinical contribution to make—perhaps even spiritualism, of which he seems to think poorly.

THE DENTIST'S SIGN.

ESTABLISHED for the statutory purposes of the Dentists Acts and therefore charged with the duty of upholding the status and standards of a learned profession, the Dental Board of the United Kingdom continues its efforts against advertising by dentists. In particular it seeks to suppress the abuse of signs announcing a dentist's place of practice. The "Important Notice," circulated to all practitioners, informs them clearly that the only permissible sign is that which "in its character, position, size and wording is merely such as may reasonably be required to indicate to persons seeking them the exact location of and entrance to the premises at which the dental practice is carried on." The Dental Board has wisely restricted itself to this general statement of principle and has not undertaken to delimit with a yardstick the uniform dimensions permissible to announcements and lettering. Naturally the general standard cannot be applied to particular cases without apparently evolving certain rule-of-thumb formulæ. There are instructive passages in the address recently delivered by Sir FRANCIS ACLAND as chairman of the Board at the opening of its nineteenth session. Summarising correspondence with registered dentists in Glasgow, he showed that the Board exercises an equitable jurisdiction and recognises that circumstances vary with the situation of the premises. The Board expects that a practitioner in a private residential street will be content to announce his place of practice with an ordinary professional plate. Elsewhere, amid shops and other professional premises, the dentist's name and description may be allowed in addition on not more than two windows. In busy commercial thoroughfares the Board has not objected to hanging or illuminated box signs of reasonable size, though it does not tolerate the use of "daylight signs" or intermittent or flickering lights of the kind familiar in the modern manifestations of commercial advertising.

No reasonable practitioner, we imagine, will think that the Dental Board has been unduly severe in imposing limitations. It is not desirable that the public should be encouraged to suppose, by analogy with the sphere of commercial propaganda, that the value of a dentist's skill is to be measured by the size, brilliance, or frequency of his notices. Some dentists in Glasgow and the West of Scotland, it appears, employ fascia boards with letters 12 inches high or more. The Dental Board is entitled to the support of the whole profession in endeavouring to put an end to such an abuse. It is gratifying to hear from Sir FRANCIS ACLAND that the Lanarkshire Dentists Society has notified its members that large letters or fascia or other notice boards are not permissible and has requested that all such announcements be removed. There is evidence that the more blatant forms of dental advertising are occasionally employed out of the desire to outbid a neighbour. Action by the local organisations which have the best possible knowledge of the circumstances is an appropriate remedy. Meanwhile the Dental Board is trying to raise the general standard progressively. As this is found possible, local diversities will diminish. There are, of course, some who would prefer that an absolute and uniform maximum of permissible display should be laid down irrespective of local circumstances. To this demand Sir FRANCIS ACLAND has made an effective reply. He points

out that in that event the Dental Board could never hope to win any case on appeal to the High Court. He pictures himself under cross-examination as an official witness on the appeal of a dentist whose name has been struck off the register for advertising his premises at a corner site on Piccadilly Circus with the locally familiar type of flashing or revolving coloured electric lights. He might have to admit in the witness-box that he regarded an illuminated box sign in Harley-street as even more flagrant and disgraceful in a professional sense; and yet such a box sign would, if the uniform standardisation were adopted which some now desire, be legitimate.

The Dental Board has achieved success in these matters by persuasion rather than by compulsion. But it must not be thought that there is no legal power to enforce the standard. As the chairman has lately explained, the judicial definition of infamous and disgraceful conduct in a professional respect will cover conduct by a practitioner in the pursuit of his profession "which will be reasonably regarded as disgraceful or dishonourable by his professional brethren of good repute and competency." Those words, framed by Lord Justice LOPES and cited with approval by the Master of the Rolls in Allinson's case in 1894, are as applicable to the dental as to the medical practitioner.

ANNOTATIONS

THE COMMISSION ON NURSING.

Lord Crawford and Balcarres has consented to preside over THE LANCET Commission on the position of nursing. The terms of reference of the Commission are to inquire into the reasons for the shortage of candidates, trained and untrained, for nursing the sick in general and special hospitals throughout the country, and to offer suggestions for making the service more attractive to women suitable for this necessary work. The members of the Commission are:

The Earl of CRAWFORD and BALCARRES, P.C., K.T., F.R.S.
Prof. HENRY CLAY, M.A., D.Sc., late Professor of Social Economics in the University of Manchester.
Miss R. E. DARBYSHIRE, R.R.C., Matron, University College Hospital.
Miss L. CLARK, M.B.E., R.R.C., Matron, Whipps Cross Hospital.
Dr. ROBERT HUTCHISON, F.R.C.P., Physician to the London Hospital and to the Hospital for Sick Children, Great Ormond-street.
Prof. F. R. FRASER, M.D., F.R.C.P., Professor of Medicine in the University of London, Physician to St. Bartholomew's Hospital.
Mr. A. LISTER HARRISON, J.P., Chairman, Committee of Management, Metropolitan Hospital.
Miss M. D. BROCK, D.Litt., Headmistress, the Mary Datchelor Girls' School.
Mrs. OLIVER STRACHEY, Chairman, Employments Committee, London Society for Women's Service.
Miss EDITH THOMPSON, C.B.E., Member of Council, Bedford College, University of London.
Sir SQUIRE SPRIGGE, M.D., F.R.C.P., the Editor of THE LANCET, with Dr. M. H. KETTLE, an assistant editor, as honorary secretary.

Any organisation or individual wishing to provide evidence for the Commission to consider, or to make proposals relating to the improvement of conditions of service of the nursing profession, is asked to communicate with the hon. secretary at THE LANCET Offices, 7, Adam-street, Adelphi, London, W.C.

THE EDUCATION OF THE DEAF.

A PRACTICAL step forward in the higher education of the deaf was taken at the recent meeting of the National Institute for the Deaf held at University College, London, and presided over by Lord Charnwood. There were present at the meeting representatives of educational authorities and special schools, and members of bodies such as welfare societies generally and the societies associated with the National Institute in different counties, while delegates from county councils also attended. Lord Charnwood laid before the meeting a scheme designed to fill an admitted gap in our system of national education, seeing that at the present moment the disability of deafness debars scholars leaving the primary schools from proceeding to institutions where they could receive a higher training; in this way valuable material is lost to the nation, while many persons quite capable of being not only self-supporting but useful citizens are driven into positions of helplessness. Lord Charnwood read to the meeting a letter from Sir Charles Trevelyan, President of the Board of Education, agreeing to the suggestion that there is a definite need of secondary schools for the deaf, which institutions had yielded good results already in the United States. Speaking to this authoritative text, Lord Charnwood placed before the meeting a scheme for promoting the higher education of the deaf by providing a school at which deaf children, after reaching the age of 16, would be assisted to study along particular lines especially fitted to meet their capabilities. The scheme was drawn up by a committee of the National Institute, and was placed before the meeting with a recommendation that an appeal should be made for £20,000, which would be required at the outset. Lord Charnwood allowed that more than double that sum would be required before the plans could be realised, but he could have left no doubt in the mind of the audience that the demand for public assistance was justified. Money we know is scarce, and forcible appeals reach daily those who are in a position to help good work; but alike from the public and the medical point of view a plan for the securing of the higher education of the deaf should be given every chance of early success. The careful training of the deaf would make self-supporting many who are now burdens on others, and would relieve the deadly isolation of the plight of the deaf. Further, among the deaf population, given a proper chance of self-expression, there would certainly be found, he reiterated, many whose work was valuable to society. This is a point which perpetually escapes the public attention, while it constitutes a most practical argument for public appeal.

CONSTITUTION IN GRAVES'S DISEASE.

MANY observers have pointed out that periodic variation of signs and symptoms is common in Graves's disease, and have reported difficulties in diagnosis to which exacerbations and remissions give rise. E. Moschcowitz[1] has carried these observations further by studying the temperamental peculiarities

[1] Arch. Internal Med., October, 1930, p. 610.

of patients for many years before they actually develop the disease. In his opinion these peculiarities are characteristic. Such people, he says, are always of a certain type—sensitive, restless, temperamental and emotionally unstable, with rapid pulse-rate and a tendency to tremor which increases at times of mental strain or emotional crisis. They are very sensitive to thyroid medication. The transition to true Graves's disease is often sudden, and the exciting cause is usually some form of psychic trauma, often fear. The signs and symptoms of hyperthyroidism are secondary phenomena, and the degree to which basal metabolism is increased is only an indication of the extent to which the thyroid is overactive, the value of the test being in some way equivalent to the value of the clinical thermometer reading in a febrile state. When as a result of operation or remission the basal metabolic rate becomes normal the constitutional factor remains unchanged. This is the true basis of the disease, and is often hereditary, but environment also plays a part in accentuating the tendency. Moschcowitz thinks the disease has a greater incidence in the female sex because women are more sensitive, while racially it is a product of the higher civilisations. Understanding of these constitutional factors shows at once that treatment directed to the thyroid alone is insufficient and likely to fail unless attempts are subsequently made to improve surroundings and mental outlook. Treatment, in fact, only begins after the operation has been performed, and in Moschcowitz's opinion complete cure is never possible.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

THE new school building, gift of the Rockefeller Foundation, has only been occupied since the recess of 1929, but in addressing the annual meeting of the Court on Nov. 28th, Prof. W. W. Jameson, the dean of the school, was able to speak of considerable development of work in the various divisions since that time. Sir Andrew Balfour, director of the school, was unfortunately prevented by illness from attending the meeting, and the dean presented the sixth annual report to the governors in his stead. During the past year the school has received delegates attending a conference organised by the Central Council for Health Education and, on a later occasion, members of the American Public Health Association. A study of the report of the board of management, presented by Sir Harry Goschen, shows the wide range of research now in progress in the various divisions; in bacteriology *B. aertrycke* and *B. abortus* are under investigation, as well as a Salmonella bacillus causing abortion in sheep; in biochemistry the metabolism of certain of the lower fungi are being studied, and in the division of chemistry applied to hygiene the blood changes in infection and the oxidation of domestic and trade effluents have been under consideration. In the department of entomology research has been chiefly concerned with the relation between insects and atmospheric conditions and with insect respiration; papers have been published by workers in the department of helminthology on ascariasis and on the fauna of sewage. A large number of protozoa have been studied, including the trypanosomidæ, certain coccidia, and the malarial parasite. Research on agricultural parasites is being carried out at St. Albans by the Institute of Agricultural Parasitology.

The public health division has been particularly concerned to provide courses of instruction for public health students, and this end has been forwarded by arranging for a series of lectures to be delivered by recognised experts. Coöperation on the part of various Government departments, local authorities, and medical officers of health has made it possible for students to visit places of public health interest. A collection of plans and specifications is being collected with the aid of the public health service which will make it possible for the division to act, in time, as a clearing station for the public health data which accumulate from year to year. Already increasing numbers of persons are applying to the school for information and assistance, and many visitors are sent to the division by the League of Nations and the Rockefeller Foundation. Thanks to the Seamen's Hospital Society an adequate supply of clinical material has been available for teaching purposes at the Hospital for Tropical Diseases, and experiments are being made to prepare clinical cinematograph films, of which one on beri-beri has already been completed. The museum of the school is still incomplete but includes sections on water-supplies, sewage disposal, contagious diseases, milk production, and tropical medicine. The library is growing steadily, and the use of a medical library is demonstrated to the students at the beginning of every tropical course.

The financial position, though satisfactory at the moment, calls for the backing of a large endowment; but, as the annual report points out, anything in the nature of a hospital appeal would be unlikely to excite widespread sympathy. It is not generally appreciated that the familiar assertion that prevention is better than cure is a grotesque understatement. An increased income may ultimately be secured from the colonial Governments, and when Sir Andrew Balfour's health permits he will visit the colonies to make the necessary appeal on behalf of the school.

REACTION OF LIVING TISSUE TO IRRADIATION.

A CRITICAL review of the harmful effects of irradiation by X rays and radium is contributed to the *Quarterly Journal of Medicine* for October by Sir Humphry Rolleston who gives references to no less than 288 original papers. The risks from the use of X rays were reported, he reminds us, within a short time of the application of these rays in medicine, and the succeeding years have shown that, while the effects of improper handling can be eliminated by the adoption of suitable precautions, the best means of avoiding damage to the tissues in the course of treatment have yet to be determined. Two sections of the review deal with matters which are warmly debated at the present time. The first of these is the possibility of stimulating normal tissues by such rays. Sir Humphry himself inclines to the view that any apparent stimulation of normal tissues is a temporary phase, followed invariably by more or less definite functional or organic deterioration. It is, we think, true to say that all the possible modes of stimulation have not yet been tried; if and when optimum conditions are found, it seems reasonable to suppose that the temporary phase of stimulation may be so lengthened as to rid the term of its usual rather restricted interpretation. The second crux is the question whether such rays can exert a stimulating action on malignant growths. From a consensus of the considerable number of papers on the subject Sir Humphry states that a stimulating action cannot be regarded as definitely established. But without regarding it as a certainty we must yet

reckon with the possibility of stimulated growth, although, if a malignant mass subsequently grows faster after irradiation than before, it is not safe to draw the conclusion that the growth has been stimulated. The inhibitory influence of the surrounding tissues of the body may have been impaired or the resistance diminished in other ways. Part of the divergence of opinion about stimulation may arise from too strict an interpretation of the term and too little attention to the processes involved. In the *British Journal of Radiology* for October, Dr. Takahashi describes a series of carefully planned experiments designed to show the effects of beta and gamma rays upon the processes of repair. Contrary to expectation he found that a region of normal tissue would sometimes react favourably to a strong dose of radiation when it did not to a weak dose. Further, he was able to show that the initial damage caused by the radiation had to be of a certain severity in order to provoke regeneration. In the interest of precision this term might be preferred to "stimulation" in describing the reactions to irradiation.

THE BOARD OF CONTROL.

UNDER the provisions of the Mental Treatment Act, 1930, the Board of Control will be reconstituted, as from Jan. 1st, 1931, to consist of the chairman and four other senior commissioners. Mr. Laurence George Brock, chairman of the present Board, will be chairman of the Board as reconstituted. The other members will be Mr. Simon John Fraser Macleod, K.C., on the recommendation of the Lord Chancellor, and Sir Charles Hubert Bond, F.R.C.P., Dr. Arthur Rotherham, and Mrs. Ellen Pinsent, on the recommendation of the Minister of Health.

INTEREST IN FOOD.

LAST Friday's discussion at the Royal Society of Medicine (reported on p. 1236) showed no waning of interest in the problems of national feeding, which were forced on Europe in 1914-18. Dr. Hamill himself brought out the point that in addition to negative factors there may be positive food factors which exert inimical effects on metabolism. We know that a substance occurs in cereals, especially in oatmeal, which reduces calcium retention and the calcification of bone, and which is neutralised by plenty of vitamin D, best obtained from milk and fat fish such as herring. This may be but the beginning of a new grouping of food factors. A correct plan of diet may imply a delicate and complicated balancing of such factors, far beyond our present knowledge. Although so many knowledgeable people took part in the discussion the question went unanswered whether the taking of vitamins in excess might not harm the elderly by enabling them to digest more easily and so be tempted to surfeit. Talking of individual adjustments, it was said that a man should reduce his diet when he gave up Rugby football, or, as the case might be, when he found himself out of work. The obvious improvement noted in the condition of the children in crowded areas during the last 20 years was ascribed largely to the greater availability of fresh fruit in these days. The disappearance of summer diarrhœa was credited to pasteurised milk, no mention being made of more efficient scavenging. It was stated that lionesses had more cubs when fed, not as has been usual on the muscles of old horses, but on good fresh meat with fat; that boys of Dr. Barnardo's schools have good teeth because they have to clean them twice daily and can only buy as a relish not sweets but fresh fruit. Mention was made of the importance of giving enough water to maintain the alkalinity of the blood alkali; an egg-farmer was quoted as having said that since giving the hens more water they came more quickly to laying and laid more eggs. This is enough to indicate that the discussion also was full of meat and deserved a full report.

TREATMENT OF PERNICIOUS ANÆMIA.

FURTHER work on the treatment of pernicious anæmia with desiccated defatted stomach is described by C. C. Sturgis and Raphael Isaacs in the *American Journal of Medical Sciences* for November. They employed hog stomach which was finely minced and dried at low temperature, after removal of the mesenteric and fatty layers. It was then defatted by repeated washing with light petroleum and yielded an almost tasteless product, which was given with tomato juice. A hundred grammes of fresh stomach gave 11–15 g. of dried material. Details are given of the successful treatment of 22 patients by this means, and it is stated that 7–10 g. of the dry material were found to be satisfactory as a maintenance dose. In the early stages 10 g. for each million deficit in the red cell count is recommended. An attempt was made to find out which part of the stomach supplied the active substance. Thus one patient, later reacting excellently to whole stomach, did not respond to treatment with the muscular layer, dried and defatted. On the other hand, five patients were treated with mucosa alone, also with practically negative results in four cases, while the fifth had a slight reticulocyte response but no complete remission until whole stomach was given. The authors explain these results by adopting W. B. Castle's hypothesis of an enzyme secreted by the mucosa and acting on muscle protein. In the present case this action is brought about during the preliminary mincing of the fresh stomach which allows the enzyme to make contact with the muscular layer. In the same number of the journal is an account, by J. E. Connery, of the treatment of pernicious anæmia patients with an aqueous extract of fish liver. In making the extract the oil was removed and fraction G, as described by Cohn, Minot, Alles, and Salter, was used. Six patients were successfully treated, details of each case being given. Mammalian meat, liver, and kidney were excluded from the diet. The livers of cod, haddock, and other fish were employed for the extract. Improvement followed comparable to that seen in treatment with mammalian liver.

THE STUDY OF CANCER IN ANIMALS.

THE forthcoming publication of the ninth scientific report to be issued by the Imperial Cancer Research Fund is announced in the annual report of the Fund for the year 1929–30, where Dr. J. A. Murray, F.R.S., the director, summarises the new work which will be included in the volume. The executive committee of the Fund take the opportunity of reminding the public that the Fund has from its inception deliberately devoted its energies principally to the experimental study of cancer in animals. While it is possible to approach certain of the problems of the origin of cancer by a study of the disease in man, the long duration of life in the human species limits the possibilities of successful attack. In every country in the world where cancer is studied systematically, organisations and institutes have been set up on the same

model as this Fund to acquire new knowledge by study on short-lived animals in order to economise time and money. Another reason for the restriction of the main endeavours of the Imperial Cancer Research Fund to the experimental study of cancer under laboratory conditions—and this restriction has not escaped criticism—is the fact that the whole group of tumours which can be transmitted specifically without the intervention of living cells can only be studied at present in the domestic fowl. A further use for experimental animals in cancer research is in trying out suggested lines of treatment. The executive committee regard the publication of new methods of treatment which have not fulfilled the expectations of their authors and of sufferers from the disease as one of the most discouraging features of the world-wide activity in cancer research during the last ten years. They believe that a more extended and critical utilisation of the methods and material made available by experimental cancer research, before advancing to the crucial, time-consuming experiments on man, would not only be the means of avoiding much unnecessary human suffering, but would accelerate progress. This suggestion should be followed up. The early work done under the auspices of this Fund proved conclusively that the new growths occurring spontaneously in animals correspond with those arising in human beings; and later work, in these laboratories and elsewhere, has left no doubt that cancer artificially produced progresses to a fatal issue if left untreated. It seems a plain duty, therefore, to study by preliminary trial on animals any new method of treatment before offering it for clinical application.

BACTERIOPHAGE IN CHOLERA.

ADDITIONAL information on the use of bacteriophage in the treatment of cholera has been sent us from India since the publication of our leading article on Sept. 20th. The work which Prof. d'Herelle began under the auspices of the Indian Research Fund Association has been carried on for a period of three years, now nearly expired, by his pupil and successor in this particular field, Dr. Igor Asheshov. In the period Jan. 1st to Sept. 1st, 1929, Asheshov addressed himself more especially to the laboratory side of this work, and his results[1] are of considerable interest, not only from their bearing upon the immediate practical problem, but from the light they throw upon certain aspects of bacteriophage behaviour. The main fact elucidated by Asheshov and his colleagues is that at least three strains of bacteriophage are necessary for effective and complete lysis of a culture of cholera vibrios. Three such types, named A, B, and C, will, as a rule, accomplish this end. The failure of permanent lysis is, as is well known, due to the emergence of "secondary" resistant cultures from a growth which is under the destructive influence of the bacteriophage. These mutant strains may, however, be susceptible to another strain of bacteriophage, and by the application of this principle Asheshov has selected his three types. These are complementary in their action, in that the secondary cultures resulting from the action of A are susceptible to B; but only partially so, since a second secondary culture will arise, which, in its turn, may be extinguished by C. This looks like selective action upon a heterogeneous population. The strains differ amongst themselves in other characters; thus, while A acts rapidly the duration of its effect is short and secondary cultures soon make their appearance. It is, moreover, somewhat liable to loss of virulence and only active against smooth vibrios, and it seems never to reach so high a concentration in media as do the other two strains. These are more polyvalent in action, lysing both rough and smooth strains and acquiring a high concentration in media. The C strain is less dramatically lytic than either the A or B. In the presence of all three types, Asheshov states that lysis is usually complete, unless the bacteriophages are of low virulence. As an outcome of these experiments it is to be noted that the preparation of a suitable bacteriophage is not as simple as has been widely represented, and that many of the important races are much less stable, and more delicate in cultivation, than was formerly appreciated. Efforts are, accordingly, being directed to the establishment of a mixture of bacteriophages which would be at the same time polyvalent in action, rapid in producing lysis, and stable in solution.

In regard to treatment, Asheshov and his colleagues do not take up the position indicated in our leading article. They say: "we cannot do away with saline and alkaline infusions. . . . We continue our experiments in the treatment because we strongly believe that with the modification of our bacteriophage cultures the results will be improved. However, we think that the main rôle of the bacteriophage will be not in the treatment of cholera, but in its prevention." This is a weighty pronouncement in the face of d'Herelle's statement that "the administration per os of cultures of bacteriophages possessing a high virulence for the cholera vibrio constitutes the specific treatment of Asiatic cholera."[2] Further, the belief that this agent should be exclusively administered by the mouth has evidently been abandoned, since Asheshov states that he is experimenting with intravenous injections with encouraging results.

The work of Asheshov bears the stamp of care and caution. If he finally succeeds in establishing the position of the bacteriophage in reference to cholera—which with different reports has varied from that of an almost unfailing specific to that of an inert substance—he will have rendered India no small service.

[1] Asheshov, I. N., Asheshov, I., Khan, S., and Lahiri, M. N.: Ind. Jour. Med. Res., 1930, xvii., 971.

A MEMORIAL TO GEORGE VIVIAN POORE.

THE National Homecroft Association is proposing to erect a memorial to Dr. George Vivian Poore, whom they regard as an advocate of homecrofting, although he did not use that name for it. Poore certainly deserves to be remembered, for in many ways he was a remarkable man, whether considered as physician, clinical teacher, author, or sanitarian. At his best there was something compelling about his light-hearted brilliance. Of slight build and delicate physique he possessed a voice with which he filled the largest room with ease, and his after-dinner speeches and other public utterances were long remembered by those who heard them. He was a clear and learned exponent of the principles of forensic medicine, lecturing on the subject at Charing Cross and later being professor of medical jurisprudence at University College. At both the medical schools to which he was attached he was a pioneer in the study of medical electricity, but it was by his work as a practical sanitarian that he was best known. His contributions on matters like the hygiene of the street,

[2] Indian Med. Res. Memoirs, 1930, No. 14.

the water-supply of country districts, the curious ignorance of sanitary affairs, appeared in our own columns; his clear and incisive style was displayed to great advantage in his book entitled "London, Ancient and Modern, from the Sanitary and Medical Point of View." In his dislike of the water-carriage system of sewage disposal Poore stood almost alone, and as far as town life is concerned he was fighting a losing battle. Pull the chain and let the sanitary authority do the rest has won the day. But in the garden of his house at Andover he raised luxuriant crops of fruit and vegetables by manuring with a mixture of fresh fæces and earth, at the same time proving that the subsoil water remained perfectly wholesome and capable of use as a domestic supply; and he may well have been right in believing that in the country such simple and conservative methods are both feasible and fruitful. He held, as Dr. F. G. Crookshank puts it, a steady and unwavering belief in the national importance of a domestic agricultural economy, or polity, that would render possible, profitable, and attractive a life on the land. Agriculture, Poore declared, is the corner-stone of preventive medicine. His ideals have found a sponsor in the Homecroft Association, which has been trying to put them into practice on their estate near Cheltenham. The memorial, for which they hope to raise sufficient funds from among Poore's old students and friends, is to be a special croft with a building about twice the size of the others, to serve partly as a dwelling and partly as a school. The proposals were outlined by Prof. J. W. Scott at a meeting recently held at Church House, Westminster. Some £250 has already been subscribed and a further sum of £200 promised. All who are interested are invited to communicate with Prof. Scott, at University College, Cardiff.

"STATUS THYMO-LYMPHATICUS."

In 1927 Prof. Major Greenwood and Miss Hilda Woods published a study of status lymphaticus,[1] in which they maintained, first, that to base a diagnosis on the weight of the thymus alone was unreasonable, a conclusion also reached by J. A. Hammar; secondly, that sudden death was no more the fate of people with heavy thymi than of others; and thirdly, that the concept of a status or diathesis explained by a thymic abnormality was "a mere farrago of random assertion and debased tradition." Since then Hammar has published a second volume[2] in which a special chapter is devoted to 44 cases of alleged status lymphaticus. He declares that in these cases the thymus is not only not enlarged, but also fails to show any hyperplasia of the medulla, any accidental involution, or any new formation of Hassall corpuscles. He concludes that cases of "inexplicable" death may be the expression of some physiological abnormality of the endocrine system and that stigmata—a reduction or cessation of new formation in the Hassall corpuscles—may be found in the thymus. These stigmata, however, have only a statistical significance and cannot be applied as criteria in clinical or medico-legal practice. Prof. Greenwood, discussing these findings,[3] examines Hammar's data arithmetically. He forms a table of all the children who died suddenly with negative or trivial post-mortem indications, showing the conditions in the thymus, and a similar table of normal children. These tables show that Hammar's conclusions are amply supported by figures. There is no appreciable difference between the thymus of normals and that of "sudden death" cases, but a count of the Hassall bodies might possibly be of some value for group differentiation, if made with care and accuracy. The variability of this measure is, however, nearly 50 per cent. in a normal series, so that it is obviously useless as an individual criterion. Prof. Greenwood suggests that, now that the thymic theory is exploded, the time has come for some careful work on other organs and functions, in an attempt to elucidate the mysterious condition improperly known as status thymo-lymphaticus.

[1] Jour. Hyg., 1927, xxvi., 305.
[2] Die Menschenthymus in Gesundheit und Krankheit, Leipzig, 1929.
[3] Jour. Hyg., November, 1930, p. 403.

FOUNDATION DAY AT THE UNIVERSITY OF LONDON.

The first official celebration of Foundation Day of the University of London took place on Nov. 28th. The ceremony took the form of a procession in full academic dress through the Great Hall of the University, an impressive charge from the Vice-Chancellor, and the investment of the successful candidates for higher degrees. The company reflected well the prestige of this comparatively young university, which is already great in achievement. Diplomats, statesmen, masters of city companies, and mayors of the boroughs which make up the county of London, as well as those more directly concerned with education or with the arts and sciences, assembled to do honour to the University, and remained to enjoy the pleasant party which followed the more formal proceedings. The guests, who included friends of the new masters of surgery and doctors of science, medicine, laws, and literature, who were presented for degrees, were received, in the unavoidable absence of the Chancellor, Lord Beauchamp, by the Vice-Chancellor, Rev. John Scott Lidgett, the Chairman of Convocation, Mr. S. L. Loney, the Chairman of the Court, Lord Macmillan, and the Principal, Mr. Edwin Deller, LL.D. The Vice-Chancellor in his charge recalled the fact that the centenary of the foundation of the University was approaching, and that it was hoped to celebrate it fittingly in the new buildings at Bloomsbury. Among the doctors of medicine on whom degrees were conferred were Dr. T. Anwyl Davies, who was awarded the university medal in medicine, and Dr. Dorothy S. Russell, who was awarded the university medal in pathology. During the evening the band of the Scots Guards played a programme of music, and in the library reading room a small exhibition of rare and interesting books, including the Prince of Wales' MSS., "Life of the Black Prince" (circa 1385) was on view.

COMPARATIVE PATHOLOGY OF TUBERCLE.

In a monograph published this week by the Medical Research Council,[1] Dr. H. H. Scott sets out the material drawn from post-mortem examinations made by him on 300 fatal cases of tuberculosis occurring amongst Chinese of the labouring class in Hong-Kong and also on a series of wild animals dying of tuberculosis whilst in captivity at the London Zoo. The writer has availed himself of a unique opportunity to make a comparative study of the morbid anatomy of tuberculosis in two groups not hitherto submitted to careful examination. That there is a close analogy between tuberculosis in wild animals living in captivity

[1] Tuberculosis in Man and Lower Animals. Special Report Series No. 149. H.M. Stationery Office. Pp. 270. 4s.

and tuberculosis in human races that have only recently come into contact with civilisation is now well recognised. They are both examples of tuberculosis in virgin soil. Dr. Scott's monograph, therefore, helps to fill a gap, so that we now have a more or less continuous record of the study of tuberculosis from the florid disease as it affects captive wild animals, and the so-called unsalted races at the one end of the scale to the modified disease as it is seen in domesticated animals and the adults of immunised races at the other end. Between these two extremes is the tuberculosis of the unprotected infant both in immunised and non-immunised races. In addition to the valuable post-mortem records of the Hong-Kong infants, an unprotected collection of cases, the monograph is a mine of information for the study of the natural history of the disease, containing as it does a record of many autopsies made by the author, when pathologist to the Zoological Society of London, on ungulates, carnivores, monkeys, birds, and reptiles. There are also two concluding sections dealing with the comparative pathology of tuberculosis and mycosis in birds and in mammals. Dr. Scott finds these two diseases occurring together not as a mycotic implantation on old phthisical cavities but as two separate infections developing side by side in the wild animal, an example of symbiosis which we do not recollect having been dealt with at any length previous to Dr. Scott's monograph.

A COMMITTEE ON MENTAL DEFICIENCY.

THE British Medical Association has decided to appoint a committee to report on the various medical problems presented by mental deficiency, more especially with regard to methods which have been suggested to reduce its incidence and to the facilities for medical education in this subject. The Council of the Association was led to take this step at its last meeting by the receipt of a communication from the National Council of Women in Great Britain, urging that definite practical means should be taken to prevent the propagation of the mentally defective, the idea being the appointment of a Royal Commission of Inquiry. Dr. R. G. Gordon, who moved the appointment of a B.M.A. committee, maintained that mental deficiency was a medical matter, and deprecated the tendency in this country for its discussion to get into the hands of lay bodies, whether educational or social. The problem should, he thought, become the responsibility of the whole medical profession, and he regretted the limited opportunities for education on this subject afforded by the medical schools. Dr. Brackenbury felt that medicine was chiefly concerned with the origin and propagation of mental deficiency; its treatment was not wholly a medical question. There is welcome evidence in various directions of awakening interest in the problem as a whole. In our review columns this week will be seen a notice of a book in which Dr. Henry Herd endeavours to give a general working basis of psychological principles for the student of mental defect. His object has been to provide a book, midway between the medical and psychological, containing sufficient material from both aspects for the medical officer when called upon to examine children whose mentality is below the average. Another review illustrates the extent to which we are indebted to those outside medicine for the stimulus to such study. The late Miss Margaret Macdowall's account of her own experience in the training of mentally defective children has been reissued as a memorial volume. She spent her life in personal study of the special characteristics of mentally defective children, and much of her teaching has now become accepted tradition. The committee of the B.M.A., it may be added, consists of its officers ex officio and the following members: Prof. R. J. A. Berry, Dr. R. Langdon-Down, Sir Ewen Maclean, Dr. R. G. Gordon, Dr. A. F. Tredgold, Dr. W. Langdon Brown, Dr. R. M. Stewart, Dr. E. O. Lewis (Board of Control), Dr. Letitia Fairfield, Dr. H. P. T. Young (H.M. Prison, Wormwood Scrubs), Dr. J. S. Manson, Prof. F. A. E. Crew, Dr. H. C. Bristowe, and Dr. L. A. Parry. In addition a representative is to be appointed by the Society of Medical Officers of Health, and another by the Royal Medico-Psychological Association.

MORTALITY FROM APPENDICITIS.

IN a leading article in our issue of Nov. 22nd we called attention to the high mortality from acute appendicitis and quoted certain figures in illustration. These figures were ill chosen for their purpose, since they are not in fact comparable. Prof. Grey Turner's death-rate of 3·5 per cent. in 2252 cases of his own includes "interval" operations, as is clearly shown in his original letter in THE LANCET.[1] If such operations are excluded we are left with 1339 cases of truly acute appendicitis, with a mortality of 5·7 per cent. The figure given for two London teaching hospitals (6·2 per cent.) also requires revision, for reference to Mr. Love's Hunterian lecture[2] shows that he has deliberately excluded "early cases in which the infection is still limited to the appendix and which are universally treated as a surgical emergency." His object in so doing was to demonstrate that the later cases, if treated with "discrimination and not according to rule of thumb," have a lower immediate mortality and fewer complications or sequelæ than those operated upon as soon as seen.

THE PRESIDENT OF THE ROYAL SOCIETY.

ON Dec. 1st, at the 268th anniversary of the Royal Society's foundation, Sir Frederick Gowland Hopkins, M.D., was elected to the presidency in succession to Sir Ernest Rutherford, O.M. Since 1914 he has occupied the important chair of biochemistry at Cambridge University, and last year his outstanding contributions to the study of accessory food factors won him the Nobel Prize for Medicine in conjunction with the late Prof. Christiaan Eijkman. Sir Frederick Gowland Hopkins became a Fellow of the Royal Society in 1905, and received the Royal and Copley Medals in 1918 and 1926. His latest honour is a further source of pleasure to the medical profession and especially to those who have been in any way associated with him.

THE scientific committees of the British Empire Cancer Campaign have produced a short authoritative work entitled The Truth About Cancer. At the annual general meeting of the body, held at the House of Lords last July, H.R.H. the Duke of York, the President, strongly approved of the intention to issue such a book, which aims at placing before the public a true picture of what relief may be reasonably expected when advantage is taken of the benefits of modern treatment. The work appears as we go to press.

[1] THE LANCET, 1929, i., 465.
[2] Ibid., p. 375.

MODERN TECHNIQUE IN TREATMENT

A Series of Special Articles, contributed by invitation.

CCCXIV.

AFTER-TREATMENT OF SOME COMMON OPERATIONS.

PART III.*

SPECIAL OPERATIONS: GASTRO-JEJUNOSTOMY.

WHEN gastro-jejunostomy is performed for severe pyloric or duodenal obstruction, a common complication is *acute dilatation of the stomach*. To anticipate this and avoid its danger I complete the operation of gastro-jejunostomy, when the stomach is large and atonic, by performing also a temporary jejunostomy, through which the patient may be fed. Acute dilatation in which distension is a prominent symptom may be distinguished from intestinal paralysis by the nature of the vomiting with its repeated regurgitation of foul fluid gastric contents. There should be no delay in passing a stomach-tube and evacuating the large amount of fluid that collects in the stomach, and this should be repeated every few hours.

Diet.—In a straightforward case a patient after gastro-jejunostomy may be fed according to the following scheme.

While he is recovering from the anæsthetic for the first 12 hours ½ oz. of water is given frequently.

Second 12 hours: 1 oz. of such clear fluids as albumin water, panopeptone, glucose and water, and raisin tea is given hourly.

Third and fourth 12-hour periods: 1 oz. of clear fluid and 1 oz. of peptonised milk are taken alternately every hour, if awake.

Fifth 12-hour period: 2 oz. of peptonised milk hourly.

Sixth 12-hour period: alternate feeds of 3 oz. of peptonised milk and 3 oz. of citrated milk every two hours.

Seventh 12-hour period: 3 oz. of citrated milk every two hours.

On the fourth day thin bread and butter, chicken cream, and pounded fish are allowed, in addition to milk, which is citrated until the end of the first fortnight.

On the fifth day cold fresh ham and tongue are added to the diet.

From the fourth day onwards, three times a day and the last thing at night, a teaspoonful of the alkaline powder recommended by H. MacLean is given—i.e., sod. bicarb. one part, mag. carb. (powd.) two parts, bism. oxycarb. two parts.

Cases of perforated duodenal and gastric ulcer are usually suffering from starvation and are fed, after operation, in a similar way.

Hæmorrhage.—A serious occasional complication of gastro-jejunostomy is hæmorrhage. It is, perhaps, not sufficiently known that the most powerful remedy to stop the bleeding is blood transfusion; while preparation is being made for this, hæmoplastic serum should be given subcutaneously. Milk should not be long withheld after such a hæmorrhage, for regular small feeds counteract hyperacidity.

Cholecystectomy.

Operating through a right paramedian incision, I always take the precaution of inserting a small tube near the common bile-duct and bringing it out through a small incision at the outer border of the rectus muscle; this tube is turned daily and there is usually some escape of old blood about the sixth day. If no bile appears the tube is removed at the end of a week, but if leakage of bile occurs the tube should be kept in place for a week after bile ceases to appear. Unless this is done there is the danger of extravasation of bile into the peritoneum in a situation where it is difficult to detect, either the right posterior subphrenic space or the lesser sac of peritoneum; such extravasation occurs insidiously and causes obstruction of the colon and the duodenum, and in a fat patient may be very difficult to get at and drain, owing to dense omental adhesion. After gall-bladder operations especially it is most important that the daily intake of fluids be very large.

Suprapubic Prostatectomy.

An open operation is performed in the advanced Trendelenburg position; this minimises hæmorrhage during the enucleation of the prostate. A large tube is sewn into the bladder and attached also to the skin; collapsible tubing (Paul's) carries off the urine, and can be detached daily for irrigation of the bladder with glyco-thymolin (one drachm to the pint); for this purpose a rubber catheter is passed within the large drainage-tube down to the prostatic bed. The wound remains watertight until the eighth day, when the large tube is removed and a smaller one inserted in its place, a Hamilton Irving box being applied; within the box a gauze bag containing boric crystals should be placed, resting on the skin. From the eighth day onwards, until the wound is too small to admit a catheter, the bladder is irrigated twice daily with concentrated boric solution. On the tenth day a full-sized silver bougie is passed along the urethra into the bladder. Before and after operation, one-grain methylene-blue pills or pyridium gr. ¼ are administered three times a day. When the patient for the first time passes a considerable quantity of urine naturally, it is not unusual for him to have a rigor, and it is wise to warn him of this beforehand.

Primary hæmorrhage from prostatectomy is guarded against by carefully ligaturing or under-running all bleeding-points before suturing the bladder wall, and by keeping up the Trendelenburg position after the patient is put back to bed, and during his transfer from the theatre; packing of the prostatic bed is to be avoided because it encourages sepsis and sloughing. In reactionary hæmorrhage the bladder may fill with clot, so that the mouths of bleeding veins are kept open; in such cases it is sometimes sufficient to empty the bladder of blood and irrigate the prostate bed with boric lotion; if, however, the hæmorrhage is persistent, it is less dangerous to give an anæsthetic and suture the bleeding-points than to allow the patient to lose much blood. Secondary hæmorrhage occurs after the first week and can be prevented in most cases by leaving no remnants of prostate or tags of mucous membrane at the time of operation, and by irrigating the bed of the prostate every 12 hours during the second week. Severe secondary hæmorrhage calls for exposure and suturing of the bleeding vessel.

Epididymitis, even going on to suppuration, used to be a not uncommon complication of prostatectomy about the third week. It is prevented by ligaturing and dividing each vas deferens at the upper part of the scrotum, either at the time of the operation of prostatectomy or of a preliminary suprapubic drainage.

Though the patient is passing water freely by the urethra, there is often some delay in the final closure of the suprapubic urinary fistula. In such a case a soft catheter is tied in the urethra and kept in position for 48 hours, during which time the fistula will usually close. The catheter must not be kept in position

* Parts I. and II. appeared in our issues of Nov. 22nd and 29th respectively.

unchanged for more than two days or it will cause urethritis and infection of the prostate bed. This manœuvre often needs repeating before final success attends it. More persistent fistulæ may be due to infection, to obstruction of the internal meatus by scar tissue, prostatic remnants or a flap of mucous membrane, or to the formation of a phosphatic calculus. Such complications may be prevented by a thorough open operation, but if they occur they must be dealt with by reopening the bladder and dealing with the trouble from above.

For threatening or established *anuria* following prostatectomy, theocin sodium acetate is given in gr. 10 doses every four hours by mouth and 5 per cent. glucose solution intravenously. Rectal therapy and enemata should only be used with great caution after this operation, for there may be enough bruising and œdema of the mucous membrane to make its perforation by a rectal tube or catheter very easy.

After every operation for prostatectomy the patient should drink 100 ounces of bland fluids every day for several weeks.

Operations for Hæmorrhoids.

For hæmorrhoids it seems that the dissection and ligature operation is still the surest means of obtaining a permanent cure, valuable as is the injection treatment in suitable cases. Every tiniest bleeding-point is carefully ligatured and all ligatures are left long, so that at the end of the operation there may be fifty or more ends of catgut protruding from the anus. I therefore never employ the so-called "tell-tale" tube; it causes pain and spasm and in my view increases the risk of hæmorrhage; nor will it certainly reveal bleeding, for it may be blocked by clot, and the only reliable signs of hæmorrhage are the pulse and general condition. Morphia is given hypodermically if the patient has pain, but this is often unnecessary in the absence of a tube; there is no advantage in using morphia in the form of a suppository.

On the fourth day the bowels are opened with castor oil, and before they act olive oil is injected into the rectum. On the fifth, seventh, and ninth days the finger must be inserted up to its base through the anal canal; this prevents adhesions and the stricture that is one of the common complications of an uncared for hæmorrhoid operation. When the last ligature comes away, about the tenth day, healing may be considered to have taken place and the patient may leave his bed.

Amputation of the Breast.

After radical amputation of the breast there are three important points in treatment. It is usual to insert deep mattress sutures of the skin so as to evert the edges of the wound; these should be retained for at least a fortnight, otherwise the flaps will pull apart and separate, or at least stretch the scar. The dead space is drained by a long tube reaching to just below the clavicle and curving round the back of the axilla to its exit through a puncture wound below; it must be borne in mind that considerable muscle exudation goes on for a week or more, and premature removal of the tube allows a collection of fluid to form, especially just below the clavicle. In dressing the case at the end of the operation the arm should be kept from the side by padding at an angle of about 40 degrees; on the second day the arm is set free and the patient is persuaded to place her hand behind her neck and to persevere until she can touch the opposite ear. She can practically always do this, though it seems to her at first to be impossible, and if she carries out this exercise daily she will escape the painful and disabling loss of abduction that used to follow such operations frequently.

Operations on the Lower Limb.

Let us now take, as an illustration of operations on the lower limb, the removal of a semilunar cartilage. This operation is performed with a tourniquet, so as to avoid the entrance of blood into the joint and obviate the use of swabbing. Before the tourniquet is removed the dressing is applied, with an even layer of wool all round the limb extending well above and below the joint and bandaged in position with moderately firm pressure; over this another layer of wool is bandaged with rather firmer pressure. The limb is then held almost vertical and the tourniquet removed. The limb is kept as high as possible, with the hip flexed to about 70 degrees while the patient is returned to bed, and this position is maintained continuously for 10 days, by placing a chair upside down on the bed and covering it with pillows to provide a firm and comfortable sloping surface. The bulky wool dressing provides sufficient splinting. At the end of 10 days the dressing is removed, the stitches are taken out, and the patient, lying on his side, actively flexes his knee beyond a right angle. It is almost dramatic to see how easily he does this, as a result of keeping the joint free from blood and œdema during and after the operation. I allow the patient to walk on the twelfth day and find that recovery of the thigh muscles is most rapid if the limb is used naturally and massage is not employed. A patient of mine played tennis quite happily within three weeks of this operation. The same principles apply to more serious operations on the lower limb, such as bone grafts, and traumatic œdema is so certainly prevented by the exaggerated elevation that I do not hesitate to apply plaster-of-Paris over the dressing at the end of the operation, and leave the limb untouched for as much as a month before even removing the sutures.

C. W. GORDON BRYAN, *M.C.*, F.R.C.S.,
Senior Surgeon to Out-patients, St. Mary's Hospital; Surgeon, Paddington Green Children's Hospital.

THE SERVICES

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. A. F. Davy to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Capt. J. E. Rea to be Maj.

Lt. R. A. Kennedy relinquishes his temp. commn.

The undermentioned Lts. (on prob.) are confirmed in their rank: J. E. Snow, E. G. C. Darke, and N. H. Lindsay.

TERRITORIAL ARMY.

Col. G. L. Thornton to be Hon. Col. R.A.M.C. Units, 43rd (Wessex) Div.

Lts. D. S. Middleton, F. Lishman, and G. M. Heiron (late temp. Surg. Lt., R.N.) to be Capts.

Lt. T. A. A. Hunter, from T.A. Res. of Off., to be Lt.

G. M. Frizell (late Cadet Serjt., Belfast Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

G. H. Thompson (late Cadet Corpl., Belfast Univ. Contgt., Sen. Div., O.T.C.) to be Lt.

N. Moulson to be Lt.

J. J. Mitchell (late Lt., R.A.M.C., T.A.), to be Lt.

INDIAN MEDICAL SERVICE.

R. M. L. Still to be Capt. (on prob.).

EXTENSION OF SHEFFIELD ROYAL INFIRMARY.—Prince George recently opened extensions of this hospital which have cost £24,000. The new building, which is of concrete, comprises a casualty department, a theatre, massage and dermatological departments, and a self-contained X ray department, with pathological, physiological, and biochemical laboratories.

SPECIAL ARTICLES

GENERAL MEDICAL COUNCIL.

(*Continued from p. 1199.*)

THE Council turned to the consideration of

Penal Cases,

receiving first the report of the Dental Board. According to custom, the Council heard the cases in public and deliberated on them in camera, after which the President announced their finding.

CASES REPORTED BY THE DENTAL BOARD.

The Case of Francis Leonard Harrison, registered as of 13, Bute-street, Treherbert, Glam., "Dentist 1921."

The Dental Board, having considered the conviction of Francis Leonard Harrison, reported as follows: Francis Leonard Harrison had attended on May 14th, 1930, and applied for the adjournment of the consideration of his case until the November Session, in order that he might have a better opportunity of providing himself with legal assistance. His application had been acceded to. Mr. Harrison had not attended the inquiry on Nov. 12th, 1930, nor had he been represented. The following facts had been established by the evidence: Francis Leonard Harrison had, at the York Assizes, commencing on Nov. 19th, 1929, been convicted of the following felony—namely, of embezzling the sum of three pounds, the moneys of Norman Tetlow Williamson, and other sums, and of fraudulently converting the said sums to his own use and benefit, contrary to Sections 17 and 20 of the Larceny Act, 1916, and of the following misdemeanour—namely, of falsifying accounts contrary to Section 1 of the Falsification of Accounts Act, 1875, and had been sentenced to 12 months' imprisonment in the Second Division.

Mr. Harrison had written to the Board craving their indulgence in his absence. He had stated that his case was as follows: (1) His offence was in no way connected with his profession, and was simply a matter of account between employer and employee, and in no way had he abused his professional duties. (2) His employer had done exactly the same thing with his immediate predecessor, that is, engaged him on salary and commission, and then, on his leaving, withheld the money owing for commission. (3) He was 46 years of age, and had spent the whole of his adult life in the practice of dentistry, over 26 years, without a fault of any kind against his professional character. (4) He was incapable of earning a living in any other profession or industry. Mr. Harrison also stated that his children, a boy and a girl, had by their application and industry obtained scholarships to universities, and if he was not allowed to practise they would be unable to continue. It was proved at the trial that the approximate amount of money missing was altogether between £100 and £150. Harrison's commission would amount to about £25.

The Board recommended that the name of Mr. Harrison be erased from the Register. Their solicitor, Mr. Harper, laid the facts before the Council. Mr. Harrison was not present, nor was he represented. The Council decided to direct the Registrar to erase his name.

The Case of John Patrick McLaren, registered as of 10, Wood-street, Doncaster, "Dentist 1921."

The Dental Board, having considered the complaint against John Patrick McLaren, reported as follows:

On Nov. 13th, 1930, the inquiry was held, when John Patrick McLaren attended in person. The following facts were established by the evidence:—

That in or about the month of June, 1928, John Patrick McLaren gave to the Independent Order of Oddfellows (Manchester Unity) Friendly Society (Approved Society No. 123) a fraudulent estimate of dental work to be done for one Thomas Henry Singleton, a member of the said Order, and subsequently certified the completion of work, although not done, and fraudulently obtained payment in respect thereof.

Mr. McLaren admitted to the Board that he had had the money, and expressed his regret. He said that he required it to pay his retention fee to the Board.

The Board considered that the name of Mr. McLaren ought to be erased from the Register. Mr. Harper addressed the Council. Mr. McLaren was not present, and was not represented. The Council directed the Registrar to erase his name.

MEDICAL CASES ADJOURNED FROM PREVIOUS SESSIONS.

The Case of Donald McGregor Stewart, registered as of 5, Waunwen, Nantymoel, Glam., L.R.C.P. & S. Edin. 1917, L.R.F.P.S. Glasg. 1917, who had been summoned to appear before the Council in November, 1929, on the following charge:—

That you were convicted of the following misdemeanours, viz.: (*a*) At the Bridgend Petty Sessions: (1) On Oct. 16th, 1926, of being drunk whilst in charge of a motor-car, and were fined £3 and your driving licence suspended for 12 months; also of driving a motor-car to the danger of the public, and were fined £1; (2) on Oct. 8th, 1927, of being drunk, and were fined 10*s.*; also of using indecent language, and were fined 30*s.*; (3) on Nov. 26th, 1927, of using indecent language, and were fined £3 or 14 days; (4) on June 16th, 1928, of using indecent language, and were fined £2 or 14 days' hard labour; (5) on August 18th, 1928, of being drunk and disorderly, and were fined £1; (6) on May 11th, 1929, of using indecent language, and were fined £3 or 14 days' hard labour; and (*b*) at the Ystrad Police-court; (7) on June 25th, 1928, of using indecent language, and were fined £3.

There had been no complainant in this case.[1] Mr. Stewart had given assurances of future sobriety at the original hearing in November last, and the Council had suspended judgment for 12 months.

Mr. Stewart appeared and confirmed his assurances. The Council decided that his name should remain on the Register.

The Case of Ratilal Shivlal Shah, registered (Colonial List) as c/o Ujamshi S. Shah, High Court Pleader, Rajkot, India, M.B., B.S. 1922, U. Bombay, who had been summoned to appear before the Council on the following charge:—

That, being a registered medical practitioner, you have advertised for the purpose of obtaining patients or promoting your own professionalad vantage, viz.: (1) By the issue of two leaflets in respect of two medicines concocted by you, to wit "Shwetanjan" and "Muktanjan." (2) By calling your private home or dispensary "Dr. Shah's Eye Hospital" or "Dr. Shah's Ophthalmic Hospital." (3) By inserting, or sanctioning the insertion, or acquiescing in the insertion, in the March, 1928, number of a Gujarati paper called *Sharda* of an advertisement of the above-mentioned remedies. (4) By inserting, or sanctioning the insertion, or acquiescing in the insertion, on another page of the issue of the said paper *Sharda*, a portrait of yourself with a laudatory notice below such portrait. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The Council's attention had been drawn to this case by the Bombay Medical Council. At the former hearing the Council had found the evidence insufficient for a decision.[2]

Dr. Shah was not present but was represented by Mr. H. F. Parfitt, of Messrs. Minett, May and Co., solicitors. Mr. Harper addressed the Council and said that an application by Dr. Shah for restoration had been refused by the Bombay Medical Council, "at present." There were no new facts to lay before the Council, but it had never been clear how these advertisements came to be printed; it did not seem likely that the editor or any layman had made them up.

Mr. Parfitt addressed the Council and summarised a new declaration from Dr. Shah, stating that he had withdrawn the wrappers as soon as the Bombay Medical Council had objected to them. He pleaded an unwitting infringement of the Rule. The editor of *Sharda* had denied on oath that Dr. Shah had had anything to do with the advertisement.

After deliberation the President announced that the Council had found charges 1 and 2 proved to

[1] THE LANCET, 1929, ii., 1254.
[2] THE LANCET, 1929, ii., 1194.

their satisfaction and had decided that these constituted infamous conduct. They had directed the Registrar to erase Dr. Shah's name from the Register.

The Case of Frederic William Barton, registered as of 56, Erith-road, Bexley Heath, Kent, M.R.C.S. Eng. 1889, L.R.C.P. Lond. 1889, L.S.A. Lond. 1889, who had been summoned to appear before the Council on the following charge :—

"That, being a registered medical practitioner, you abused your position by committing adultery with Mrs. Lizzie Catherine Thomas, a widow, with whom you stood and with whose deceased husband you had stood in professional relationship, of which adultery you were found guilty by the decree of the Probate, Divorce and Admiralty Division (Divorce) of the High Court of Justice, dated Jan. 16th, 1930, in the case of Barton *v.* Barton, in which you were the respondent; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

There had been no complainant in this case.[3] At the conclusion of the hearing the President had announced the Council's decision as follows: The Council are not satisfied with the evidence which has been adduced, and have adjourned this case for six months. The parties will be directed to appear again, bringing further evidence, so that we may come to a decision as to whether the inquiry is sufficient or not. Notification will be sent to the accused practitioner that he should appear in six months, and tender evidence in support of his side of the case.

The Council's solicitor said that Dr. Barton had married Mrs. Thomas and that Mrs. Barton was unwilling to give evidence. There were, therefore, no further facts to be laid before the Council, and the case was dismissed.

TWO CASES OF IMPROPER CERTIFICATION.

The Case of Simeon Moses Cohen, registered as of 1, Ynyswen-road, Treorchy, Glam., M.R.C.S. Eng. 1919, L.R.C.P. Lond. 1919, who had been summoned to appear before the Council on the following charge :—

That, being a registered medical practitioner, you on March 15th, 1930, issued the following certificate, viz :—

The Surgery, Treorchy, 15/3/1930.

I certify that W. King is unable to follow his employment since 15/3/30 owing to illness.

S. M. Cohen,
Surgeon.

Whereas you had not seen or examined the said W. King on March 15th, 1930, which certificate was misleading and improper; and that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainants, the Great Western Railway Company, were represented by Mr. Geoffrey Smallwood, counsel, instructed by the company's solicitor. Members of the Medical Defence Union withdrew. Dr. Cohen attended in answer to his notice and was represented by Mr. O. Hempson, solicitor to the Medical Defence Union.

Mr. Smallwood said that the company did not desire to press the case against the respondent, but merely to lay the facts before the Council for their adjudication. Dr. Cohen had a branch surgery at Treherbert. On March 14th a goods guard named William King had sent word that he was ill and could not attend for duty. Later in the day William Venn, the stationmaster, had seen him at the adjacent hotel, obviously in a state of intoxication. He had, therefore, sent a message to King's home that King must produce a medical certificate if he desired to be excused his period of duty, which began at 6 P.M. The next evening Venn had received the certificate which was the subject of the case. He had not been satisfied, and had gone to Dr. Cohen, accompanied by George Harris, traffic clerk of the station. Dr. Cohen had admitted quite frankly that he had not seen King at the time he had sent the certificate. Later on he had sent a letter to the railway company saying that he had been very busy at the time; that he had known King and his wife very well, and believed them to be honest, and that he had refused to sign the other certificates for which he had been asked. Counsel submitted that the certificate was obviously misleading, and was, on the face of it, unsatisfactory, because the illness was not specified. The company employed a large number of men and were bound to rely on the certificates of doctors. If they could not, much loss of time would be caused, and the discipline of the men would be undermined if they could obtain certificates as this one had been obtained.

Mr. William Venn confirmed the facts stated by counsel and said that Dr. Cohen had remarked that doctors usually endorsed certificates if they were unable to see the patient at the time. In answer to the Legal Assessor, he said that, as King did not belong to the company's provident society, the certificate was of no use to support an application for sick pay.

George Harris, traffic clerk, testified that he had accompanied Venn to see Dr. Cohen. The next day respondent's partner had informed him over the telephone that King was suffering from influenza and heart trouble.

Mr. Charles Simkins, general assistant to the superintendent of the line, said that great reliance and respect were accorded to medical certificates, and that if they were improperly given it would interfere greatly with the conduct of disciplinary cases. In answer to the Legal Assessor, he said that he did not think that the provident fund would accept the certificate in question, as the illness was not specified. It might be accepted to excuse a man from duty.

In answer to the President, witness said that the stationmaster would not have been entitled to accept the certificate in question.

Mr. Hempson then called Dr. Cohen, who said that a relative of King's had come to ask him to visit King next morning. The visitor had asked for National Health Insurance and club certificates, and witness had declined to give them. He had then asked for a certificate to release King from work; witness had replied that it was impossible to give a certificate releasing from work unless he had seen the man. He had, he thought, offered to go and see King that night and take the certificate with him, but the messenger had said that King had to report for duty or send up a medical certificate, and that a substitute had to be found before 6 o'clock. There would, therefore, have been no time to see him before the certificate was wanted. The messenger had assured him that King was in bed and ill. Witness had thought the matter over; King had been known to him for years, and he would be seeing him the following morning and no monetary question was involved. The question he had unfortunately put to himself was: did he think the man was genuinely ill? He had neither asked nor received any payment for the certificate. King had been found next morning to be genuinely ill.

In answer to a member of the Council, witness denied having used the word "endorsed." It was not his habit to use the word "illness" when he had not seen the patient, as had been suggested. He regretted extremely that this certificate was laxly worded and agreed with what counsel for the railway company had said concerning the reliance placed by the Company on medical certificates.

The President asked the witness what he meant by the words "I certify," and witness admitted in answer that the words meant that he declared from his certain knowledge that the facts were as he stated.

David Seymour, called for the defence, said that he had visited Dr. Cohen on behalf of King. He had seen King at dinner in a very poor state of health

[3] THE LANCET, 1930, i., 1255.

and King's wife had asked him later on to go and see the doctor. Witness had asked the doctor if he would call upon King, and had asked him for three certificates, which he had declined to give. He had explained that King had to sign on at 6 o'clock and asked him urgently for a certificate from work to enable a substitute to be found. Witness had said that King was in a very poor state of health and in bed. Dr. Cohen had given him the certificate in question and had charged no fee.

Mr. Hempson repeated the regrets expressed by Dr. Cohen and put in two testimonials to general character from Sir Ewen Maclean and Dr. W. S. Thomson.

After deliberation in camera, the President addressed Dr. Cohen as follows:—

Mr. Cohen: I have to inform you that the Council have given very careful consideration to the charge brought against you, and to the evidence adduced in support of it. They have found that the fact alleged against you in the Notice of Inquiry has been proved to their satisfaction—namely, that the certificate in question was given in a lax and careless manner, and was in fact misleading or improper. The Council regard laxity in the giving of such certificates as a grave matter, which may result in injury to your patients or to others, and worthy of censure on the part of the Council, but, in order that you may have time to reconsider your position in this respect, they have decided to postpone pronouncing judgment on the fact found against you until the May Session of the Council in 1931, when you will be called upon to appear before the Council once more. Before that date you will be required to send to the Registrar the names of two or three practitioners, such as those you have supplied us with just now, who will be prepared to testify to your character and conduct in the interval. In due course you will receive a formal notice of the date when you will be required to attend.

The Case of John McGhee, registered as of Station-road, Galston, Ayrshire, M.B., Ch.B. 1923, U.Glasg., who had been summoned to appear before the Council on the following charge:—

That, being a registered medical practitioner, you on Sept. 8th, 1930, signed and issued a medical certificate of cause of death of Dorothy Elizabeth Cawston, certifying the cause of death as pneumonia, and that you were in medical attendance during her last illness, whereas you had not seen or examined the said Dorothy Elizabeth Cawston, which certificate was untrue, misleading or improper. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The case had been reported by the coroner for the Easington Ward of the County of Durham.

Mr. Harper addressed the Council and pointed out that on elementary principles, Mr. McGhee ought not to have given the certificate, as he had never seen the child. Respondent claimed that, by omitting to fill in the date "last seen by me alive," he had stated that he had not seen her alive. He said that he had filled in "pneumonia" as the cause of death because that had been the opinion of the woman in attendance. Mr. Harper suggested that the real reason for his action had been that he had several times been asked to see the child and had not gone, and, to avoid publicity and reproach, had given a certificate which he had hoped would be sufficiently muddled to slip through.

The respondent, speaking on his own behalf, said that the father of the deceased had never paid the weekly sixpence which, by arrangement, covered medical attendance and drugs for the family. He had deliberately refrained from attending, as the man was in regular work, and had twice explained this to the man. He had known there must be an inquest, but had no information to give the coroner as he had never seen the child. He said he had regarded the certificate as a means of informing the registrar and coroner, as he had indicated that he had never seen her alive by putting a stroke through the printed date in that division. The Registrar had said he could not accept the certificate. Mr. McGhee maintained that if he had wanted to deceive he could have made a better job of it. He had been under the impression that one way to procure an inquest was to return an unsatisfactory certificate.

In reply to the President, he said that he had been in Durham five years and had had dealings with the coroner before. On one occasion he had written a letter detailing the medical history of a patient of his who had dropped dead. The cases had, however, been straightforward, whereas the present case differed in that the girl had never been his patient and the police had sent the father to him for a certificate. He had signed the statement without reading it.

In reply to Mr. Harper, he admitted saying to a messenger from Cawston that he might come to see the child after dinner; it was not true that he had said he would come at once.

After deliberation in camera, the President announced that the Council had found the charge proved to their satisfaction; that they took a very grave view of such conduct but had decided to postpone judgment for 12 months.

CHARGES OF INTOXICATION.

The Case of John Griffith Barrie, registered as of 100, Tulse-hill, Brixton, S.W. 2, L.M.S.S.A. Lond., who had been summoned to appear before the Council on the following charge:—

That you were convicted of the following misdemeanours, viz.: (1) on Nov. 11th, 1925, at the Greenwich Police-court: (*a*) of being drunk whilst driving a motor-car, and were fined 40*s.* and £10 10*s.* costs; and (*b*) of driving a motor-car in a manner dangerous to the public, and were fined £20 and your driving licence endorsed and suspended for the remainder of term; (2) on May 21st, 1928, at the Westminster Police-court, of driving a motor-car in a manner which was dangerous to the public, and were fined £20 and £6 costs (or in default six weeks' imprisonment), licence endorsed and disqualified for six months; (3) on May 21st, 1928, at the Westminster Police-court, of driving a motor-car in a manner which was dangerous to the public, and were fined £20 (or in default six weeks' imprisonment), licence endorsed and disqualified for six months; and (4) on July 22nd, 1930, at the Lambeth Police-court, of being drunk and disorderly, and were fined 15*s.* and 15*s.* costs.

Mr. Barrie attended and was represented by Mr. Pereira, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors, on behalf of the London and Counties Medical Protection Society. There was no complainant. Mr. Harper, the Council's solicitor, laid the facts before the Council and Mr. Pereira examined Mr. Barrie, who expressed his extreme regret, gave assurances for the future, and said that he had been a total abstainer since July 13th.

Dr. G. K. Reeves and Dr. C. G. Martin testified to Mr. Barrie's abstinence since July and his hard and conscientious work in a large practice. They both lived near him and saw him frequently. Dr. Reeves ascribed his occasional intemperance to overwork.

The President announced that the Council had found the facts proved to their satisfaction, but that, in order to give Mr. Barrie an opportunity of reconsidering his position, they had decided to postpone judgment for a year. Mr. Barrie repeated his assurances of improvement.

The Case of James Rutherford Ratcliffe, registered as of 1, Grange-street, Port Talbot, Glam., M.B., C.M. 1897, U.Glasg., who had been summoned to appear before the Council on the following charge:—

That you were convicted of the following misdemeanours, viz: (1) on March 3rd, 1916, at the County Police-court, Neath, Glamorgan, of being drunk in charge of a motor-car, and were fined 40*s.*; (2) on March 24th, 1919, at the Clerkenwell Police-court, of being drunk, and were fined 10*s.*; and (3) on April 22nd, 1930, at the South-Western

Police-court, of being drunk and incapable, and were fined 1*s.* and 10*s.* 6*d.* costs.

Dr. Ratcliffe appeared in answer to his notice and was represented by Mr. Pereira, counsel, instructed by Messrs. Le Brasseur and Oakley, solicitors, on behalf of the London and Counties Medical Protection Society.

Mr. Harper, the Council's solicitor, laid the facts before the Council. Dr. Ratcliffe had been warned and had twice acknowledged his error. Mr. Pereira called Dr. Ratcliffe as witness on his own behalf. He admitted the charges and expressed his most sincere regret and his intention to abstain from alcohol in future. Mr. Pereira put in two statutory declarations from a doctor and a dentist in Glamorgan, testifying to the respondent's character, and pointed out the lapse of time between the three convictions, and the small fines imposed.

The President announced that judgment would be postponed until May of next year, subject to the usual provisos.

The Case of John Logan Lamond, registered as of 80, Belsize Park-gardens, Hampstead, N.W. 3, M.B., Ch.B. 1916, U.Edin., who had been summoned to appear before the Council on the following charge:—

That you were convicted of the following misdemeanours, viz.: (1) on Nov. 16th, 1926, at Wealdstone (Middlesex) Petty Sessions, of being drunk and incapable, and were fined 5*s.* and 10*s.* 6*d.* costs; (2) on March 15th, 1927 at Bow-street Police-court, of being drunk in charge of a motor-car, and were fined 30 guineas and 10 guineas costs, or two months' imprisonment in default; and (3) on July 3rd, 1930, at Bolton (Lancs.) County Police-court: (*a*) of being drunk whilst in charge of a motor-car, and were fined £40 and £4 4*s.* costs, or three months' imprisonment; (*b*) of driving a motor-car in a manner dangerous to the public, and were fined £1, licence suspended and disqualified for obtaining another for two years.

Dr. Lamond attended in answer to his notice and was accompanied by Mr. Hinde, counsel, instructed by Messrs. Sawyer and Withall, solicitors.

Mr. Harper laid the facts before the Council. Mr. Hinde pleaded that Dr. Lamond was highly strung and nervous, with an impediment in his speech, and suggested that the policeman had been in error. He had only had two or three drinks in a private house, but he was very easily affected by alcohol. Mr. Hinde called Dr. Lamond as a witness on his own behalf; he promised to abstain from alcohol in future.

The President announced that judgment would be postponed for 12 months.

The Case of Francis Patrick Kennedy, registered as of 111, Cambridge-road, E.1, L., L.M. 1913, R.C.P.Irel., L.M. 1913, R.C.S. Irel., who had been summoned to appear before the Council on the following charge:—

That you were convicted of the following misdemeanours, viz.: (1) on April 20th, 1925, at the Stratford Petty Sessions: (*a*) of being drunk in charge of a motor-car, and were fined 40*s.* (or in default 31 days' imprisonment) and 10*s.* 6*d.* doctor's fee; and (*b*) of driving in a dangerous manner, and were fined £5, or in default 31 days' imprisonment; (2) at the County of London Sessions commencing on Oct. 7th, 1930, of being drunk while in charge of a motor-car, and were fined £25 and £25 costs, licence suspended and disqualified for holding a licence for three years.

Dr. Kennedy attended in answer to his notice and was accompanied by Mr. Oswald Hempson, solicitor. Mr. Harper laid the facts before the Council and said that Dr. Kennedy had pleaded "not guilty" to the charge of dangerous driving.

Mr. Hempson called Dr. Kennedy as a witness on his own behalf. He said that he had been reversing his car in order to turn and had driven on to the pavement in this way. He had sold his practice because of the publicity attendant on this case; he repeated his sincere regrets and undertakings for the future. Mr. Hempson pointed out the long interval between the offences, and said that both were late at night when the doctor was off duty.

The President announced that the Council had decided to postpone judgment for 12 months.

The Case of Ralph Johnston Tait, registered as of 48, Queen's-road, Leicester, M.B., Ch.B. 1913, U.Edin., D.P.H., R.C.P.S. Edin., and R.F.P.S. Glasg. 1920, who had been summoned to appear before the Council on the following charge:—

That you were convicted at Leicester of the following misdemeanours, viz.: (1) on Nov. 15th, 1926, of being drunk and incapable and were fined 10*s.*; and (2) on April 19th, 1930, of being drunk in charge of a motor-car, and were fined £10 and 10*s.* special costs.

Dr. Tait attended in answer to his notice, but was not accompanied by counsel or solicitor. Mr. Harper laid the facts before the Council and Dr. Tait expressed his great regret, and said that he was peculiarly susceptible to alcohol. He promised to be absolutely teetotal in future.

The President announced that judgment would be postponed for 12 months.

The Case of James Gordon Bell, M.C., registered as of Ballochmyle House, Dunfermline, L.R.C.P. Edin. 1914, L.R.C.S. Edin. 1914, L.R.F.P.S. Glasg. 1914, M.B., Ch.B. 1914, U.Edin., who had been summoned to appear before the Council on the following charge:—

That you were convicted of the following misdemeanours, viz: (1) on Feb. 21st, 1928, at the Sheriff Court, Stirling, of driving a motor-car recklessly while in a state of intoxication, and were fined £15, licence suspended until date of expiry, and prohibited from obtaining another for two years thereafter; (2) on May 5th, 1930, at the Sheriff Court, Dunfermline, of driving a motor-car negligently and driving said motor-car against a tramway car, and were fined £3, current licence suspended, and disqualified from obtaining another for five years from expiry of current licence; (3) on May 17th, 1930, at Edinburgh Police-court, of being drunk and incapable, and were fined 15*s.* or ten days' imprisonment,

Dr. Bell did not attend and Mr. Harper, laying the facts before the Council, said that he had had great difficulty in finding him He had eventually received a reply from Mrs. Bell, who had said she did not know where her husband was and had not heard from him for some time. She had suggested an address which had at last found the doctor, who had replied, saying he would be present. Yesterday, Mr. Harper had received a letter from a firm of Edinburgh solicitors who had again said that Dr. Bell would be present and had sent a written defence. A telegram, handed in at Dunfermline, at 12.45 that day, had said that Dr. Bell could not attend owing to illness, and asked for postponement. Mr. Harper, however, doubted the bona fides of this belated excuse. The defence pleaded overwork and the results of Dr. Bell's war service, for which he had received the Military Cross and a 60 per cent. disability pension. The President announced that the facts had been proved to the satisfaction of the Council, which directed Dr. Bell to attend for judgment at the May session.

Committee Business.

The Registrar had reported at the meeting of the Executive Committee held on Nov. 24th, 1930, that a letter had been received from the University of Melbourne drawing attention to the fact that its M.S. degree was not included in the list of registrable qualifications appearing on page *c* of the Medical Register.

The following resolution had been adopted by the Executive Committee:—

Any person holding the Degree of M.S. of Melbourne University shall be entitled to register this degree as an additional qualification in the Medical Register.

The Council adopted the resolution.

EXAMINATIONS AND INSPECTIONS.

The report of the *Education Committee* was submitted by Sir Humphry Rolleston, who pointed out that the discussion with the Conjoint Board in Ireland, on the subject of the practice of passing by compensation the examination in general education, was still under discussion. The Queen's University of Belfast had announced that from next year a pre-registration examination in physics and chemistry would be held in October, in order to comply with the recommendations of the Council. Prof. R. P. Johnston, seconding the adoption of this report, pointed out that the standard of the pre-registration examination was much lower than that of the matriculation examination in these subjects, but that there seemed to be no way of exempting from the October examination students who had passed the matriculation.

The report of the *Examination Committee* was submitted by Sir Norman Walker. In accordance with the recommendation of the Committee last May, the reports of the visitors to the examination in medical jurisprudence and public health were published as an appendix, none of the bodies visited having raised any objection to publication. Meanwhile, the visitors had been inspecting the examinations in medicine, surgery, and midwifery, but their reports on these subjects were confidential until the consent of the bodies visited had been received. The inspector in midwifery had reported that the examination in midwifery at the University of London was "not sufficient." It had long been the practice for the inspectors to make a second visit if they were unable to report satisfactorily at one visit, but as this practice was not clearly expressed in the standing orders, the Committee laid before the Council the recommendation: "That the Committee instruct the inspector in midwifery to make another inspection of the examination in that subject held by the University of London in June, 1931."

Speaking on this subject, Dr. H. L. Eason objected to asking for a second inspection when the reason for the insufficiency was not before the Council. In reply, the President said he thought that he might state definitely that the reason was the absence of any clinical examination, a form of test which was now almost universal.

Another part of the same recommendation instructed the inspector in surgery to make another inspection of the examination of the Society of Apothecaries of London, as he had been unable to pronounce their examination sufficient. This raised an interesting point, because the assistant examiners for the Society had been for many years appointed by the Medical Council itself. The point, therefore, arose whether the insufficiency should be dealt with between the Council and the Society or between the Council and its own assistant examiners, whose duty it was (under Sec. V. (2) of the Medical Act, 1886) to "secure at the said examinations the maintenance of such standard of proficiency . . . as is required." Lieut.-Colonel C. T. Samman, speaking on this point, assured the Council that the governing body of the Society were with him in desiring to see their examination attain as high a standard as possible; they would meet the Council in any way they could.

The third recommendation put forward by the Education Committee was: "That the President be requested to appoint a deputy visitor to visit and report on the pre-registration examination held by the licensing bodies." Mr. K. W. Monsarrat objected to the term "pre-registration examination," because many licensing bodies accepted other examinations in lieu of a pre-registration examination: He was anxious that these too should come under the ægis of the Council's inspection. The President made it clear that the acceptance of other examinations rested entirely with the licensing body; that the registrar had no power to accept any examination unless it was already accepted by a licensing body, and that it would be possible for the inspector to inquire what examinations were accepted, and to report on their scope. Sir William Taylor was anxious to have some report on the courses of study leading up to the examination, but the President said that the Council had no power to inspect pre-registration teaching. Prof. A. F. Dixon drew attention to cases where the pre-registration examination was the only examination in chemistry and physics held in a teaching centre. Sir William Taylor asked whether it would be possible to find one visitor competent to inspect both physics and chemistry, and the President replied that, judging by previous experience, it would be possible.

THE PHARMACOPŒIA.

The President introduced the report of the *Pharmacopœia Committee*. The number of copies of the British Pharmacopœia sold in the year ending Nov. 21st, 1930, was, he said, 1733, a slight decrease on the previous year. The Pharmacopœia Commission had continued its work of writing and revising monographs, and a revision of posology had been completed. The Pharmacy Subcommittee were engaged in devising formulæ for new preparations, and a new edition of the British Pharmaceutical Codex was in preparation. The Commission had established friendly relations with the Committee of Revision of the United States Pharmacopœia. The Pharmacopœia Committee had approved the inclusion in the new Pharmacopœia of monographs on insulin and irradiated ergosterol.

MATERNAL MORTALITY.

The Council discussed the recommendations which a joint committee of the Education and Examination Committees had prepared after considering the interim report of the Departmental Committee on Maternal Morbidity and Mortality, which contains the observations of that committee on the Council's recommendations adopted in 1923, and certain recommendations for the education of the medical student in obstetrics. The Council, after making a few verbal alterations, adopted the report of the joint committee, and directed that copies of the proposed communication be sent to the Lord President of the Privy Council, and to each of the licensing bodies for comment.

The communication, as amended, is as follows:—

The Council, being fully convinced of the need for progressive improvement in the teaching of obstetrics, readily complies with the request of the Privy Council to give the Report of the Departmental Committee on Maternal Mortality and Morbidity prompt and favourable consideration, and appoints a joint committee consisting of all the members of its Education and Examination Committees to consider and to present a report thereon to the Council during the present session.

It is within the knowledge of the Council that some of the licensing bodies are not successful in ensuring that all the present recommendations of the Council in respect of the training of students in midwifery are in fact being carried out.

In connexion with this it should be borne in mind that the decennial inspection of the three final or qualifying subjects is now in progress, and that the reports of the inspector of midwifery hitherto received contain much valuable information as to the extent to which the recommendations of the Council (1923) are observed by the different licensing bodies. It is in the opinion of the Council desirable to await the

completion of this inspection before further or amended recommendations are issued by the Council.

With the proposal to concentrate the teaching of obstetrics, gynæcology, and closely related subjects into a continuous period of six months the Council is favourably impressed.

The proposal to increase the duration of residential study in a maternity hospital or maternity ward to two months is approved by the Council, and where practicable should be carried out forthwith.

When the Council is satisfied that all the licensing bodies are able to ensure the provision of 20 obstetric cases for each student, the figure specified in the existing recommendation, the question of increasing this number to 30 can and will be considered by the Council. At present the Council is inclined to lay more weight on a longer period of residence that on an increased number of obstetric cases.

The Council in its present recommendation (1923) has recognised the importance of adequate instruction in ante-natal care, and welcomes any proposal which will increase the facilities for such instruction now accessible to students.

Pending the completion of the inspection of the qualifying examinations in midwifery, the Council considers it advisable that the several licensing bodies should have an opportunity of considering and of commenting upon the recommendations of the Departmental Committee, having special regard to the practicability of introducing all or some of the changes proposed into the medical curriculum.

Recommendation.—That a copy of this report be sent to each of the licensing bodies, with a request that before May 1st, 1931, its comments thereon should be sent to the Medical Council.

The Council also directed, on the motion of Dr. Brackenbury, that a letter should be addressed to the Minister of Health requesting that students be admitted to the new maternity wards which will be available to local authorities under the Local Government Act, 1929.

The joint committee reported that they had not yet been able to devote adequate time to their consideration of the report of the Society of Medical Officers of Health on The Place of Preventive Medicine in the Medical Curriculum, which they describe as "an important and interesting document."

MEDICINE AND THE LAW.

The Dog in the Car.

A RECENT decision of the Court of Appeal will have interested the many medical practitioners who are owners both of motor-cars and dogs. One evening, 18 months ago, a man parked his saloon car with its back to the kerb in a street at the rear of a well-known shop in Oxford-street. Inside the car was his Airedale dog. As another man walked past the back of the car, the dog (which was said to have been barking and jumping about in the car) smashed the glass panel. A splinter of glass entered the eye of the passer-by; operation was necessary, and four days later the eye was removed. The victim of the accident claimed damages against the owner of the dog, alleging various forms of negligence. The defendant, he argued, was at fault in parking his car where he did, in placing the dog inside, in leaving the car and dog unattended on the public highway, and in failing to tie the dog up in a safe and suitable manner. The case was tried before Mr. Justice Talbot and a common jury, and the plaintiff was awarded £2000. The Court of Appeal has reversed the decision, and has ordered judgment to be entered for the dog-owner. Animals, said Lord Justice Scrutton, may be divided into two classes. There are the wild animals, like tigers and gorillas, which are likely to be dangerous in themselves; a man taking out such an animal is responsible for the damage which it does. In the second class come the animals like dogs and cats, which are ordinarily kept in comparative freedom. There is no obligation to keep the latter class under control; unless the owner is aware that the dog or cat has some vicious tendency, he is not liable for the damage it may do. This particular Airedale terrier, as Mr. Justice Talbot had said, had a hitherto blameless character; the owner therefore was not responsible for the accident. Hundreds of people, said Lord Justice Scrutton, leave dogs in motor-cars, and nobody had ever heard of such an accident before. The defendant left his car with an apparently perfectly well-behaved dog inside; something then happened which had never happened before. This was not negligence; there was no evidence on which the jury could find for the plaintiff.

Motor-car Insurance.

In another case concerned with motor-cars the Court of Appeal has upset a decision of the court below. The owner of a car was insured under a policy which contained a not too clear clause covering the use of a substituted car. Having occasion to require repairs to the car, and finding that the cost of the repairs would be considerable, the motorist decided to buy a fresh car of the same type, handing over the old car in part payment. He met with an accident in the new car and he sued on the policy. The judge at trial took the view that the new car of the same type could be deemed a substituted car within the cover of the policy. The Court of Appeal has now decided that this interpretation is wrong. The motorist was insured in respect of a particular car and, when he gave up the ownership of it, he ceased to have an insurable interest under the policy.

It is possible that this, and the preceding case, will be taken to the House of Lords. If so, the last word has not yet been said. The fact that a High Court case may thus undergo two successive revisions has been commented on lately by correspondents who think that litigation is too slow, too dear, and too uncertain. If there is a strong Court of Appeal, these critics remark, a further appeal to the House of Lords is altogether unnecessary.

Arsenic in Sweets.

Remarkable evidence was given at Stoke-on-Trent during criminal proceedings against two men, respectively described as a sugar boiler and a sweet manufacturer. The actual charge upon which they were convicted was that of powdering sweets with arsenic. According to the prosecution the Food and Health Department of the Stoke City Council became aware early in September of an outbreak of illness due to the eating of sweets. The sweets were found to be heavily impregnated with arsenic. On Sept. 8th every bottle of sweets made by this particular manufacturer was seized and sealed to prevent further distribution. The sugar boiler had premises in Tunstall, where a box was found containing nearly a hundredweight of arsenic. He said he honestly believed it was French chalk. The sweet manufacturer had said he was short of dusting powder and so powder from the box was furnished. It appeared that in the yard near the sugar boiler's premises there were works where enamelling was done. Mr. A. E. Johnson, the city analyst, said the first sweets he analysed contained grs. 77 of arsenic per pound; another sample of cough sweets contained grs. 82. The maximum permissible was gr. 1/100th. Of two samples of dusting powder, one contained 95 per cent. of arsenic, the other consisted entirely of arsenious oxides. Fortunately, no deaths resulted; the poison being in such large doses, the consequent vomiting seems to have eliminated it before it was absorbed. The magistrate, in fining the accused

£25 and £15 respectively, said that the sugar boiler had not taken the slightest trouble to find out if the powder was fit for the purpose. Even if the man thought it was a proper powder previously used in his own business, it was grossly careless to use it without some precaution to see whether it had been tampered with. There was no substantial ground for thinking it to be French chalk. As for the sweet manufacturer, if a person, without the slightest precaution, used material which was injurious to health, and intended that, when the operation was completed, the article should be sold, that was an offence.

Had a civil action been brought against the two defendants for damages, they could hardly have avoided an adverse judgment. There was a strong prima facie case of negligence; in the legal phrase *res ipsa loquitur*. Had death resulted and been followed by criminal proceedings for manslaughter, it would, of course, have been necessary to prove a higher degree of negligence than in a civil action. One may expect that some of our enterprising municipalities will now seek powers by Local Act to keep their medical officers in close touch with the premises where sweets are manufactured. The present powers of inspection are inadequate if the local authority does not know what premises are being thus used. The provisions in many Local Acts for the registration of manufacturers and premises used for the purposes of ice-cream, potted and preserved meat, food made from fish, &c., could, perhaps, be extended.

The incident at Stoke-on-Trent will stimulate fresh criticisms of the ease with which arsenic can be handled and obtained. It is scandalous that a box containing a hundredweight of arsenic could be left about without any supervision or indication of its nature. Local Acts (for example, Section 50 of the recent Manchester Corporation (General Powers) Act) are beginning to include penalties on people who fail to take proper precautions to prevent danger from the presence of disused petroleum vessels on premises. It seems reasonable to deal with potential risk of death from poisoning as drastically as with the danger of death from fire.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

DEATH OF PROF. FUCHS.

At the age of 79 Prof. Ernst Fuchs, one of the best-known ophthalmologists in the world, died on Nov. 22nd after an attack of angina pectoris. He was a man of unusual qualities as student, teacher, and healer. A pupil of the famous surgeon Billroth, Fuchs early turned his attention to the new field opened up by the invention of the ophthalmoscope. He became assistant to Prof. Arlt, then the leading ophthalmic surgeon in Europe, and soon was called to Liége in Belgium to take charge of the eye department. There he published his famous book on "The Ætiology and Prevention of Blindness." In 1885 he returned to Vienna to succeed Prof. Jäger, and in the small eye clinic of Vienna, as it appeared at that time, originated the series of clinical, physiological, and histological discoveries which was to make the clinic a Mecca for the specialty. Fuchs was the true builder of ocular morbid anatomy. He was an unsurpassed teacher, and his Text-book on Diseases of the Eye has become, so to say, the Bible of ophthalmology. It has been translated into all the important European languages, and also into Japanese and Chinese, and patients and surgeons from every continent flocked to his clinic. He was called to China, to Egypt, India, Russia, and Spain to operate there. When, at the age of 70, he retired from his clinical post, he took to travelling all over the world, and even then made important contributions to our knowledge of foreign eye diseases. He turned his attention to the infections of oriental countries, and in his eighth decade studied conditions in Egypt and Asia Minor. As a teacher of general practitioners, Fuchs imbued all his pupils with the necessity of commanding sufficient skill to treat disorders of the anterior part of the eye. The other conditions, he taught, should best be handed over to the specialist.

DISSECTING-ROOM MATERIAL.

The problem of obtaining enough bodies to enable students in the first two and a half years of the medical curriculum to do all the necessary dissecting work has for several years been very serious here. Formerly the regulations of the hospitals were sufficient to secure an adequate supply. But now not only has the number of medical students more than doubled (compared with the years 1900–10), but the number of suitable bodies has much diminished. The law stipulates that all corpses not claimed by their relatives or friends belong eo ipso to the Anatomical Institute, if the patient dies in one of the State hospitals. Of late, however, it has become the custom that pious societies of all creeds represented in this country should take care of hospital patients reported to be friendless, and claim their bodies for a religious interment. This claim must be complied with. These societies work principally in Vienna and Graz, where there are large universities. Therefore it has become the routine practice that the provincial State hospitals supply the dissecting institutes with bodies not claimed. Furthermore in every case of suicide there is a partial dissection in the forensic institute, and if not claimed the body is usually sent to the "Anatomy" and there stored away. The law permits the sale or bequest of one's own body during lifetime, but this is rarely done. However, the vaults of the institute now contain enough bodies to keep it running for two years if the restriction of first-year medical students, as now in force, is adhered to. The restriction consists in admitting for dissecting studies only those students for whom places are available (about 250). In the first line, Austrian-born students are admitted, and only if all these are placed can foreigners be taken.

THE CAMPAIGN AGAINST TUBERCULOSIS.

The Ministry for Public Health in Austria has recently published an account of the institutions engaged exclusively in fighting tubercle. They fall into four groups—welfare centres, sanatoriums, convalescent homes, and tuberculosis hospitals. At present there are 87 welfare centres, each served by two or three competent lung specialists, assisted by one to four nurses. The object of these centres is to discover cases of tuberculosis, to help the patients to get suitable treatment, and to look after their health after treatment in one of the special institutions. The nurses follow up the cases at their homes and advise the family in matters of hygiene and prophylaxis. The 45 special sanatoriums are under the supervision of the Board of Health; 33 of them, with 4970 beds, are intended for tuberculosis of internal organs; and 12, with 942 beds, for surgical cases. It

may be noted that in the first group we find 621 beds available for men only, 1542 for women only, and 920 for children only; the remainder can be used as required. In the surgical group, 72 beds are for men, 88 for women, and 497 for children, whilst the remaining beds are in hospitals, where they are used as necessary. The number of convalescent homes is also 45. They contain 5120 beds between them, of which 168 are intended exclusively for male adults, 519 for female adults, 1360 for male adolescents, 705 for female adolescents, and 1025 for children. The rest are for both sexes and all ages. Finally, we have the hospitals for tuberculous patients—109 of them, with a total of 4017 beds. Of these, 3069 are open for pulmonary tuberculosis, and 948 for surgical cases. These hospitals are partly private (run on the profit system), but most are owned and kept by the State or the county councils.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

NIGHT NOISE.

My recent account of the action of the Touring Club of France in appointing a special noise commission has led some of my readers to assume that Paris is a noisy city. There is, in fact, little probability of a *brigade du silence* coming into effect. For some time past all police agents in the city have been entitled to put a stop to nocturnal noise, and between 1 and 7 A.M. automobiles which transgress the permissible limit of nocturnal noise are liable to prosecution. Paris is, in fact, becoming increasingly quiet during the hours of night.

THE CLOSING OF BROTHELS.

Two doctors of the sanitary service of Lyons, Dr. M. Carle and Dr. Léon Lacassagne, have set out at length in the *Siècle Médicale* what they regard as the moral consequences of the suppression of the *maisons closes* or *maisons de tolérance*. Although sexual indulgence may have become more difficult for groups which they neatly summarise as *le passant, le troubade, l'ouvrier*, it is not less apparent to them that the torrent of desire diverted from its canalised channel has overflowed its banks, submerging the frail virtues encountered on its passage. From the moral as well as the sanitary side they regard the benefits of the recent legislation as more apparent than real. There may be fewer segregated women, but there will be more prostitution in the ranks of the small employees; venereal disease in clandestine form is increasingly shown by figures both public and private. Our authorities, they say, cannot afford to omit the police supervision of prostitution. A little city like Grenoble may close its brothels and dismiss its local police, but a Congress resolution is little more than a political gesture. What applies to the small town cannot be transferred to the large, and the experience of Strasbourg may have a lesson for other urban centres. If the brothel is dying it is not the law that is killing it; in Carle and Lacassagne's opinion it is simply overwhelmed by the competition of the *maisons de rendezvous*. Prostitution is the most complicated of our social problems. Paris has its closed houses, but its streets are fairly clean. Parisians are not unaware of the little flats round Leicester-square and the solicitation at street corners. If the Londoner retorts that many of those concerned are of French nationality, he may be reminded that the Paris *police des mœurs* does not accept foreigners.

THE LATE PROF. GLEY.

You have noted the death of Prof. Gley, one of our leading physiologists, after surgical operation. He succeeded Marey at the Collège de France, and devoted his whole life to physiological research and especially to endocrinology. He was not only a great scientist, but he had an exquisite knowledge of classical and modern literature. His speeches at medical meetings were awaited with pleasant anticipation, for he could be both passionate and coldly intelligent, and his delivery was easy and audible.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 22ND, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 116 (last week 107); scarlet fever, 2297; diphtheria, 1593; enteric fever, 28; pneumonia, 828; puerperal fever, 38; puerperal pyrexia, 129; cerebro-spinal fever, 13; acute poliomyelitis, 12; encephalitis lethargica, 16; dysentery, 8; ophthalmia neonatorum, 96. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 25th–26th was as follows:—Small-pox, 221 under treatment, 3 under observation (last week 186 and 1 respectively); scarlet fever, 1938; diphtheria, 2208; enteric fever, 15; measles, 82; whooping-cough, 107; puerperal fever, 24 (plus 9 babies); encephalitis lethargica, 120; poliomyelitis, 1; "other diseases," 47. At St. Margaret's Hospital there were 11 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 40 (0) from measles, 6 (0) from scarlet fever, 10 (2) from whooping-cough, 30 (3) from diphtheria, 71 (12) from diarrhœa and enteritis under two years, and 49 (6) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Stoke-on-Trent and South Shields. Measles accounted for 13 deaths at Hull, 5 at Bristol, 4 at Liverpool, 3 each at Birmingham and Swansea. Liverpool reported 5 deaths from diphtheria. Fourteen fatal cases of diarrhœa occurred at Liverpool, and 6 at Birmingham. There was no death from small-pox during the month of October last in the areas outside the great towns.

The number of stillbirths notified during the week was 257 (corresponding to a rate of 43 per 1000 births), including 53 in London.

DEATH FROM SMALL-POX.

A fatal case of small-pox reported from Wood Green was that of a man, 50 years of age, employed as a teacher of English to foreign students in an institution in London. He complained of sore-throat on Nov. 22nd; the next day he was much out of sorts with pain in the back, limbs, and head. On Nov. 24th he called in a doctor who found a temperature of 102° F. and symptoms suggesting a severe attack of influenza. The following day he was rather worse, rambling at times in his speech. On Nov. 26th a profuse papular rash appeared on the face, trunk, and, to a less extent, on the limbs; this was suggestive of small-pox but not typical in character or distribution. As the patient was then extremely ill, Dr. M. Manson, medical officer of health, who saw him, advised removal to South Wharf as a suspected case of small-pox. On admission there he was transferred to the Joyce Green Hospital, Dartford, where symptoms of cerebral trouble became very definite, and he died 24 hours later. Permission for post-mortem examination was refused. The cause of death entered on the certificate was: (1) cerebral thrombosis; (2) small-pox. The man had been vaccinated in childhood but probably not since then.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of three counties :—

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Lancashire .. (1,811,700)	14·1	14·0	0·76	1·41	3·4	2·5	84/—	44	4·9
West Riding of Yorkshire (1,528,800)	16·7	13·6	0·87	1·28	3·0	2·3	89/38	53	5·2
Essex .. .. (1,110,400)	16·3	11·2	0·76	1·36	2·1	2·1	53/—	26	3·2

Registered stillbirths per 100 live births: Lancashire 4·9, West Riding —, Essex 3·4.

Lancashire.

Dr. J. J. Butterworth's report contains, as usual, an enormous mass of detailed information, mostly in tabular form, with respect to the 19 municipal boroughs, 81 urban districts, and 19 rural districts which make up the administrative county. Largely owing to the influenza epidemic there were nearly 4000 more deaths than in the previous year. The excess deaths were chiefly attributed to influenza, heart disease, pneumonia, and bronchitis; and the only age-periods which showed no excess were from 5 to 25 years. Little use has been made of the Housing (Rural Workers) Act. Up to June 30th, 1930, £1536 in grants had been promised in respect of 16 dwellings and £936 had actually been paid in respect of 10 dwellings. During 1929, 576 outside complaints of tuberculous milk were received and in each case a veterinary surgeon retained by the county council and a sanitary officer visited the farm. The facts found were reported to the county agricultural department and the ultimate result is not given. There are about 7224 dairy farms and the number of cattle is approximately 95,000. The clean milk competition promoted by the County Milk Recording Society, assisted by the public health department, only attracted 10 competitors. The number of licences issued for Certified milk by the Ministry is 5.

Of 4993 samples examined under the sale of Food and Drugs Acts, 2·8 per cent. were returned as adulterated. There was a drop in the percentage adulteration of articles other than milk and a slight increase in milk adulteration. Mr. G. D. Elsdon, the public analyst, commenting on the claim that the percentage of fat is seriously diminished when the cows are first put out to grass, shows that the reduction is only slight. Of over 48,000 samples of milk examined during the years 1913–29, the average composition for the year was 3·68 per cent. of fat and 8·91 per cent. of solids-not-fat. When the composition is examined month by month it is found that the average fat percentage for April is 3·63; for May, 3·59; for June, 3·55; for July, 3·57; for August, 3·66; and for September, 3·75. As is well recognised, the assumption that milk contains added water is based on its content of solids-not-fat. In 1921 Hortvet (U.S.A.) devised an apparatus for the detection of added water in milk, which depended on the constancy of the freezing-point of genuine milk. Mr. Elsdon has been investigating the reliability of the Hortvet apparatus during the year and up to the present his work confirms its value. Of 58 samples of water examined as to potability, 4 out of 10 from shallow wells were unsafe or doubtful and 2 unfit; 11 out of 16 from deep wells were classed as unsafe or doubtful; 2 out of 4 from springs, 1 out of 3 from streams, and 1 out of 14 from an upland surface source were also put in the same category.

There were 406 notifications of small-pox and 3 deaths. Scarlet fever cases numbered 6205 and the deaths 34. At Oswaldtwistle two children were removed to hospital leaving two at home. After six weeks in hospital the patients returned home and the two other children contracted the disease. As a result the local medical officer of health adopted the eucalyptus oil method and up to now has had 86 cases without a secondary case. At Preston (rural) four families with the same milk-supply were attacked. When the farm was visited a girl was found, who was desquamating, with a typical scarlet fever tongue, following a sore-throat, and her brother had been ill seven days previously. In Prestwich there was a school epidemic caused by scholars attending school whilst undergoing very mild attacks. The cases of diphtheria numbered 1620 and the deaths 120, giving the high case-fatality of 7·4 per cent. At Wigan (rural) an outbreak of enteric was attributed to a carrier, and an outbreak at Oswaldtwistle to drinking water from a stream grossly polluted with excretal matter. In 1924 there were 299 notifications of encephalitis lethargica and 103 deaths. The numbers have slowly declined and in 1929 there were 88 notifications and 94 deaths. The notification figures for the last ten years evidently underrate the number of persons affected. There was a progressive decline in the county death-rate from pulmonary tuberculosis, from 0·77 in 1922 to 0·58 in 1928, but last year there was a set-back to 0·60.

Twenty-three years ago 83 per cent. of the midwives were untrained; now, 87·3 per cent. are trained. The county council is the local supervising authority for midwives in the whole administrative county, and directs the maternity and child welfare work in 79 out of the 119 districts; it conducts one antenatal clinic at Litherland and contracts for the use of three antenatal clinics at Widnes, Chorley, and Eccles. The council also arranges for the use of 20 maternity hospitals and for the admission of antenatal cases to hospitals at Blackburn, Burnley, Liverpool, and Fulwood. The orthopædic scheme has been extended by the inclusion of one county borough, four boroughs, and three urban districts. 245 crippled children were admitted to Biddulph County Council Hospital, where 202 remedial operations were performed. The out-stations treated 2513 children.

West Riding of Yorkshire.

Dr. T. N. V. Potts, who presents the report, did not take over the duties of county medical officer until 1930. Dr. J. R. Kaye retired after 33 years' service in June, 1929, and Dr. P. L. Sutherland was acting medical officer for the remainder of the year.

The influenza epidemic showed its effect on the mortality from heart and respiratory diseases and exacted a toll especially in the earliest and later age-groups. Infant mortality was 27 higher than in the previous year. The general death-rate was the highest recorded since 1919. Dr. Potts thinks the campaign against tuberculosis will be much strengthened by the provision of the new sanatorium of 300 beds at Scotton Banks and the installation of seven X ray plants at the principal dispensaries. As the result of continued trade depression a definite impairment in the nutrition of mothers and children attending the centres was noted and greatly increased quantities of dried milk were issued. A serious epidemic of enteric fever was recorded at Honley. There were 27 cases with six deaths, and the origin of the outbreak appeared to be connected with the contamination of wells by leakage of sewage into an old culvert. Dr. Potts appeals to all local authorities,

who have not yet done so, to adopt by-laws for smoke abatement in order that there may be uniformity in administration throughout the Riding. Some ante-natal work is in operation at about half the child welfare centres, and Dr. Potts suggests that there should be a few centres with more complete equipment or maternity homes with an antenatal department manned by specialists of recognised consultative standing to which difficult cases could be referred from the ordinary centres.

Essex.

Dr. William Bullough says the death-rate was the highest since 1919, the increased mortality being largely due to influenza, diseases of the respiratory system, and heart disease. The infantile mortality only showed an increase of two. The new sanatorium at Black Notley (184 beds) was opened by the Minister of Health on April 26th, 1930, and X ray facilities have been extended and fully utilised. There has been some difficulty in maintaining a full staff of health visitors during the year. The care of the crippled children has been furthered by the appointment of a whole-time orthopædic masseuse.

The 1929 clean milk competition was limited to farms which had never received an award, with the aim of extending this educative influence to new entrants. There were 17 competitors. The county council have passed resolutions in favour of amending the nomenclature of designated milks, and of a penalty for the sale of milk which does not conform to a prescribed standard of cleanliness. The samples of milk examined for tubercle were 166 with 15 positive. The percentage of 9·6 compares with 7·0 for the previous years. Dr. Bullough thinks the effort to deal with unfit houses is meeting with more success. Some of the sanitary authorities are considering the provision of houses within the means of the lowest paid worker. Several old and derelict cottages have been most successfully renovated under the Housing (R.W.) Act, 1926. Up to December, 1929, the number of cottages reconditioned under this Act was 104.

The low rainfall of the first nine months of the year drew special attention to water-supplies. Twenty-one per cent. of the parishes in rural districts have no public supply and depend upon shallow wells, rain-water, springs, and ponds. The public supplies in 6 parishes failed wholly or partly and in 23 parishes were depleted, whilst in 244 the supply was maintained. It is hoped that an improvement will result from the power given to the county council under the Local Government Act, 1929, to contribute to the expenditure by local sanitary authorities on water-supplies.

It is considered that the nuisance caused by the dumping of London refuse on the northern bank of the Thames has reached a more hopeful stage. It is 20 years since Dr. J. C. Thresh made his first complete investigation and report on this matter.

MENTAL HOSPITAL REPORTS.

Of the two KENT COUNTY MENTAL HOSPITALS that at BARMING HEATH had 1923 patients in residence at the end of last year and there is need for further accommodation, preferably a new admission villa. Much valuable room is still occupied by mental defectives and old chronic cases who would be better off elsewhere. The recovery-rate was 32·2 per cent. and 74·1 per cent. of the recoveries took place after less than a year's treatment. The death-rate was 7·7 per cent. There were two cases of erysipelas and eight of dysentery, and a small epidemic of influenza in the spring. There has been a great increase in the work of the occupations department, and on an average 65 per cent. of the men and 90 per cent. of the women are engaged in some kind of work. A new occupations centre for women came into use last spring and the movement is more than self-supporting, the profits serving to provide trips to the sea, the Zoo and the circus, and visits to town and picture theatres. Parole is freely given. Installation of electric light is under consideration. Fifteen male nurses work on the male side and 41 attendants and 46 nurses are certificated or registered. A proposal is on foot to open an out-patient clinic at the hospital. There were 1375 patients at the CHARTHAM DOWN HOSPITAL at the end of last year and there also the question of accommodation is becoming acute. Mental defectives are still cared for in the hospital. There was a severe epidemic of influenza in the spring with 30 deaths. Although vigorous malarial treatment is given for general paralysis, many of the cases are admitted so late that the results are disappointing. Tryparsamide, bismuth, the Starke treatment, and "Sulfosin Leo" have been tried, with varying success. An investigation on blood pressure has not revealed any relation between the readings and mental disorder. A number of patients who did not seem to have benefited from their food are being treated with insulin with excellent results, but collosal calcium has not given any appreciable benefit in epilepsy. The recovery-rate was 36 per cent. and the death-rate 11 per cent. Parole is used extensively and it is hoped to have wireless in all the wards by next Christmas. The pathological department carried out a large number of routine investigations and an operating theatre is in course of construction. Craft work and drill classes are held twice weekly by voluntary helpers. Plans for a nurses' home are under consideration; 50 male and 27 female nurses are certificated or registered. A consulting ear, nose and throat specialist has been appointed to visit fortnightly.

The CITY OF LEICESTER MENTAL HOSPITAL at WEST HUMBERSTONE had 986 patients on its books on March 31st last. The recovery-rate for the year was 40·7 per cent. and the death-rate 6·6 per cent. Malarial treatment for general paralysis is being continued. There were seven cases of dysentery and one of typhoid. Two enteric carriers were found and in one the gall-bladder was removed to clear up the condition. In addition to a number of routine examinations, the laboratory has investigated the Vernes test and report in favour of it, as being less liable to human error than the Wassermann. The positive Wassermann appears to be more reliable than the positive Vernes, but the negative Vernes more reliable than the negative Wassermann. Parole has been given to more than half the men patients and nearly half the women, and leave of absence granted very frequently. Although there is no organised system of occupation, 71 per cent. of the patients have been usefully employed. The visiting dentist carried out 390 operations. The amount of sedative drugs given has been greatly reduced during the last two years and there appears to be no doubt that patients are better without them. All the nurses are expected to enter for the State examinations; three of them were successful last year, bringing the total to 50 certificated or registered.

MENTAL DEFECT.

The illustrated report of the LANCASHIRE AND CHESHIRE SOCIETY FOR THE PERMANENT CARE OF THE FEEBLE-MINDED records a happy and uneventful year. There are now 101 women and 36 girls, 140 men and 89 boys in the colony. There was one death—an imbecile woman of 35 from very rapid consumption. The report observes that there is nothing in particular to note about the women except the accidental discovery that they had a great dislike to being more than 30 years old! In consequence a special expedition and extra Christmas presents were provided for inmates over that age. The day school is attended by 81 boys and 36 girls. The health was excellent throughout the year and the only infectious illness was mild epidemics of whooping-cough and chicken-pox, one case of measles, and one of German measles. Two girls suffering from phthisis are isolated in an outdoor hut.

CORRESPONDENCE

PIGMENTATION AND DE-PIGMENTATION.

To the Editor of THE LANCET.

SIR,—In a paper given to the Physical Society in 1919 Prof. R. W. Wood demonstrated the use of some black glass which he had invented, which cut out all but a small part of the ultra-violet radiation from an ordinary mercury lamp. Prof. Wood was kind enough to give me a few samples of this glass, and the appearance of people in this beam of invisible radiation seemed striking enough to warrant further observation. In 1920 Dr. Mottram and I gave a demonstration at the Royal Society of Medicine of some of these peculiarities.

When looking at people in a beam of ultra-violet through this glass the most striking things noticed are the fluorescence of the lens of the eye, the extreme whiteness of the sclerotic, the brilliance of natural teeth and the blackness of false ones, the whiteness of the finger-nails and the peculiar tow-like appearance of hair. The difference in the appearance of the complexion of individuals is very marked. While some show a marked fluorescence of the skin, in others it is completely lacking. The skins which do not fluoresce are apparently those which tan when exposed to the sun. But perhaps the most striking appearance is that of anyone who normally freckles; these show up with extraordinary clearness even in winter, when in ordinary light the individual appears to have lost the freckles completely. They seem to be potential centres of pigmentation, which only need exposure to sunlight for pigment to be deposited in the skin. Generally speaking, I think it may be said that the appearance of children and adults falls into three categories: frecklers, tanners, and those who do neither—people who simply redden in the sun and then peel. Their appearance in the ultra-violet beam is quite distinct from the other two classes.

It occurred to me that it might be interesting to see whether freckling is a characteristic shown by infants, and, by the courtesy of Dr. Boldero, I have had an opportunity recently, in the infant welfare clinic at the Middlesex Hospital, of seeing a number of infants under such conditions that they were illuminated only by these invisible rays. The first group of 14 infants ranged in age from a few months up to a year. Of the 14 attendant mothers seven were good examples of frecklers; but none of the infants showed freckling. On a second occasion, at a clinic of rather older children, a group of 31 children, ranging in age from about 2 to 5 years, were examined. Of the attendant mothers 11 freckled and three of their children showed freckles also; their ages were 4 years 1 month, 4 years 4 months, and 4 years 9 months. Of the other children of the freckling mothers, some showed that they would tan under sunlight exposure, others seemed to be devoid of this potential characteristic.

One other observation on these children seems worth recording, and that is the contrast between the appearance of their eyes and finger-nails and those of the adult. The whites of the eyes in children whom I have looked at in this way do not fluoresce in the brilliantly white manner of adults, and the appearance of the finger-nails, especially in very young infants, is not nearly so striking; in fact they can hardly be distinguished from the soft parts of the hand. In only one child, aged 2½ years, were the nails strongly fluorescent. This was a child upon whom Dr. Boldero asked me to make special observation as its nails were very brittle. It might be worth while to make more observations of this sort to see at what stage tissues of the body develop this power of fluorescence under ultra-violet radiation, and the local or generalised power of laying down pigment in the skin.

It is a common observation that summer tanning has practically faded by the approach of the winter months. It is also probably a common observation that the summer tanning of parts of the skin not ordinarily exposed to light does not fade so quickly as in the exposed parts. One returns from the sea with face and limbs well tanned. In a few months the face and hands have returned to their normal paleness, while the feet and arms from wrist to elbow are still quite brown. The question arises why this should be. May it not be possible that light, in contra-distinction to ultra-violet radiation, has a depigmentary action? There would seem to be a number of facts to support the suggestion.

I am, Sir, yours faithfully,

SIDNEY RUSS.

Barnato Joel Laboratories, Middlesex Hospital, Dec. 1st, 1930.

DENTAL CARIES AND DIET.

To the Editor of THE LANCET.

SIR,—In your issue of Nov. 29th (p. 1194) reference is made to an investigation by Mr. A. Deverall and Miss M. Reynolds into the influence of dietetic measures on the incidence and progress of caries in children's teeth. In this investigation 449 of 882 children, living on much the same diet, were given, one-half of them vitamins A and D, and the other half vitamins D; and "It was found, after four inspections representing one and a half years, that the percentage of teeth developing caries during this period" among the 449 children "was approximately half that in the control groups" who numbered 433. Manifestly the inference we are expected to draw from this investigation is that the administration of certain vitamins helps to check the onset of dental caries. But, Sir, there is no justification for this conclusion, for of the 433 controls (16 of whom, by the way, were given vitamin A) no less than 261 were given treacle—a potent source of dental caries.

This matter of dental caries is of such grave national importance that I feel impelled to add, with the utmost respect, that the Dental Board of the United Kingdom are not likely to further the object they have at heart by countenancing and publishing such unscientifically conceived methods of investigation as this. With the best intentions in the world, those who undertake such careless investigations do positive harm by suggesting that dental caries is due to defective resistance to caries of the tooth enamel (owing to defective composition), whereas it has been proved up to the hilt—and the truth needs to be driven well home—that it is due to the corrosive action of acid (from saccharide fermentation) on the enamel, and that this is no more capable of resisting corrosive acid than a marble slab; an acid with a strong affinity for calcium inevitably seizes upon that element when brought into close proximity to it.

Our duty to the public, then, is not to addle their heads with talk of vitamins (what do the primitive

unspoilt Australian Aborigines who subsist, as we all at one time did, by the hunt and on uncultivated vegetable food—what do they, with their magnificent teeth, know of vitamins?), but to point out that caries only originates in those areas where fermentable saccharide food lodges for protracted periods, such as between the teeth and in the pits of the grinding surfaces of the molars; that it practically never originates on a smooth enamel surface kept clean by the friction of the lips or tongue—e.g., on the lingual surface of the molars or on the labial surface of the incisors at a distance from the gum margin; and that, on account of the greater liability of some teeth to retain saccharide debris than others, some teeth are attacked 20 times more frequently with caries than others, although they are all nourished with the same blood, and all equally supplied with vitamins and other essential nutrients.

These are incontrovertible truths which plainly indicate our duty to the public; they show us how we can achieve immense good. Assuming the average number of carious teeth, past and present, in the jaws of our people to be five—a figure probably well within the mark—this gives a total of 230,000,000, a shocking record for a twentieth century civilised country, the more so when we reflect upon the attendant evils of dental caries, the unsightliness, the bad breath, the root abscesses, the pain, the blood poisoning, the false teeth, to say nothing of the visits to the dentist and the expense. The strange feature of this tragic story is our supineness in dealing with it, and the ready way in which we allow ourselves to be diverted by fanciful side-issues, when the pathology and means of prevention of dental caries have been known for several years. The means of prevention are set forth in Dr. Sim Wallace's handbook, "Teeth and Health," which is approved by the London County Council for use in their schools. The salient features insisted on are: that the dietary shall contain a sufficiency of cleansing foods, and of foods compelling adequate mastication, so that the jaws shall develop properly and the teeth be able to take up their proper positions in the gums; and that the order of the items of a meal shall be such as to minimise the tendency of saccharide food to linger in the retention areas of the teeth.

By a conscientious adoption of the measures set forth in this book it is possible to reduce the occurrence of dental caries almost to the vanishing-point.

I am, Sir, yours faithfully,

HARRY CAMPBELL.

Harley-street, W., Nov. 29th, 1930.

THE CLINICAL TRIAL OF MEDICINAL PRODUCTS.

To the Editor of THE LANCET.

SIR,—The Association of British Chemical Manufacturers has noted with particular interest the opinions in regard to clinical testing which are expressed in a letter by Dr. H. H. Dale appearing in your issue of Nov. 22nd. Attention is drawn particularly to the following paragraph:—

> "It (the case of ergot alkaloids) probably furnishes only a rather striking illustration of a general reluctance of medical men in this country to undertake clinical trials of anything new, under the conditions of scientific control needed to make the results worthy of record."

The satisfactory clinical trial of new medicinal products in this country is regarded as a matter of the greatest importance by this Association, which on various occasions since 1922 has called attention to the impediment to therapeutic progress in this country caused by the lack of published reports relating to new products. Their representations have so far not met with the success which was hoped for, and at present the development of new products for use in medicine is being seriously impeded by the inadequacy of the facilities for proper clinical trials. The result is that this country is being retarded in its efforts as compared with Germany, where a much more effective system is in operation.

The Association feels strongly on this subject, and as the time appears ripe for another effort, it proposes to take the matter up with the various organisations which are interested, in the hope that by coöperative action it may be possible to devise a scheme of clinical testing which will eliminate the handicaps under which medical science is at present labouring.

I am, Sir, yours faithfully,

J. DAVIDSON PRATT,
General Manager, Association of British Chemical Manufacturers.

166, Piccadilly, London, W., Nov. 28th, 1930.

PREVENTION OF SCARLET FEVER IN SCHOOLS.

To the Editor of THE LANCET.

SIR,—Dr. Edge's letter in THE LANCET of last week on this subject makes me think that my experience at Uppingham may be of interest. Uppingham School is made up of 13 houses with central classrooms; each house has a population of approximately 50, including boys and domestic staff. Within the last three years scarlet fever has appeared three times (four cases, the disease was recognised early, and confirmed by Schultz Charlton test), the patients were removed to sanatorium, the house was isolated, and *every* inmate "Dick tested"; positives and doubtfuls were given a prophylactic dose of S.F. Serum (Wellcome). There were no more cases in any of the outbreaks. Two appearances of diphtheria were dealt with after the same manner with equally satisfactory results. Surely M.O.'s of schools have reason to be thankful for "Dick," "Schick," and "Schultz Charlton."

I am, Sir, yours faithfully,

WM. DUNN.

Woodfield House, Uppingham, Nov. 30th, 1930.

To the Editor of THE LANCET.

SIR,—May we be allowed to reply to Dr. D. Edge's courteous comments in your last issue upon our description of an Outbreak of Scarlet Fever at a Preparatory School in THE LANCET of Oct. 11th.

With regard to Dr. Edge's own experience, the fact that 15 cases of scarlet fever occurred in a day school of 250 girls in the autumn term (the usual period of greatest prevalence) and that these were followed by only two cases in the Lent term (the usual period of least prevalence) was not an unusual sequence of events; it might well have happened if no immunisation method had been used. It is significant that the Salford High School was presumably mainly a day school. Surgeon Captain Dudley[1] has shown the complete immunity from both scarlet fever and diphtheria of day boys at the Royal Naval School, Greenwich, when both diseases were prevalent amongst the boarders, an observation which, as regards scarlet fever, our own experience at public

[1] Med. Res. Council, Special Report Series No. 75. The Schick Test, Diphtheria and Scarlet Fever. A Study in Epidemiology. P. 46.

schools confirms. The age distribution of the girls (5 to 17) was probably in the main considerably higher than that of the boys in our investigation, none of whom was over 13; day pupils in the Salford school would probably contain a higher proportion of immunes. It appears also that, when Dr. Edge commenced his work, the outbreak was already nearing the end, whereas we were consulted when the epidemic was reaching its maximum, and, as examination of the cases will show, it was then too late for preventive inoculation to be effective promptly.

For the above reasons we consider that Dr. Edge's outbreak and ours are in no way comparable. Whilst we agree that to diminish the number of susceptibles and increase the number of immunes has a most important effect upon the herd immunity of the school, we feel that the success which crowned Dr. Edge's labours and upon which we congratulate him, was due in part to good fortune, and that similar success would not have been attained had we adopted the same method.

Further experience with immunisation against scarlet fever in schools or other institutions is very desirable. In estimating the results obtained by this method one must always bear in mind the special circumstances dealt with, in particular, the type of school or other institution (day attendance or residence), the stage of the outbreak when intervention was initiated, and the virulence of the infection.

We, are, Sir, yours faithfully,

J. A. GLOVER.
F. GRIFFITH.

Dec. 2nd, 1930.

TWINNING IN MONGOLISM.

To the Editor of THE LANCET.

SIR,—I should be much obliged if any correspondent who has statistics available will kindly tell me how many instances are known of twinning in mongolism, one of the children being a normal child and the other of mongol type. In the course of 33 years' work on mental deficiency I have only come across the occurrence twice, the second case having come to my personal attention this week.

I am, Sir, yours faithfully,

W. H. COUPLAND,
Medical Superintendent, Royal Albert Institution for the Feeble-minded of the Northern Counties.

Lancaster, Nov. 26th, 1930.

THE CHARTERHOUSE RHEUMATISM CLINIC.

To the Editor of THE LANCET.

SIR,—With reference to Dr. Congdon's suggestion that the Charterhouse clinic team should confine its researches to one definite entity—namely, acute rheumatoid arthritis—I think that to do so would be a mistake. At the rheumatism clinic held at the public health offices, Brighton, and run on the same lines as the Charterhouse clinic, we find it very difficult to draw any definite line between the various types of rheumatism. In the present state of our knowledge, we doubt if such a definition serves any useful purpose, other than one of convenience, but rather that it confuses the issue still more. We doubt if any case of rheumatoid arthritis remains free for any length of time from either osteo-arthritis, fibrositis or neuritis. The work at the Brighton clinic is carried out on the supposition that the streptococcus and the staphylococcus play a large part in the causation of rheumatism, and that it is of considerable importance to realise that rheumatism is not a disease of particular type of tissue, but that it is essentially a disease of the whole body.

Dr. Congdon's use of a streptococcal vaccine for the treatment of rheumatoid arthritis is interesting, in that we find the majority of such cases are more sensitive to a vaccine prepared from Dr. Warren-Crowe's two types of staphylococci (Micrococcus D. & E.). This discrepancy is possibly explicable on the supposition that, if the resistance of the patient is such that he can become infected by the rheumatism-producing streptococcus, he is likely to become infected by the staphylococcus, both these types of organism being potential serophytes.

I am, Sir, yours faithfully,

F. E. GRAHAM-BONNALIE, M.B., B.Chir. Camb.

Hove, Sussex, Dec. 1st, 1930.

MINOR DIGESTIVE DISORDERS.

To the Editor of THE LANCET.

SIR,—Having read with interest Dr. Hunt's refreshing lecture in your issue of Nov. 8th, I am led to wonder what is to be gained by substituting the term "abdominal migraine" for bilious attacks unaccompanied by headache. For some years it has been the fashion to call these attacks "acidosis," which no doubt often accompanies them, but as both the headache and the acidosis are due to an unknown digestive cause, would it not be better to retain the old name "bilious attack" until our knowledge has advanced further, rather than by a new name to appear to lay claim to a knowledge that we do not really possess. Moreover, the adjective "bilious" is justified, for such attacks are frequently prevented or alleviated by the administration of calomel, or a similar drug leading to the passage of highly bile-stained motions.

I am, Sir, yours faithfully,

Paignton, Nov. 28th, 1930. ERNEST WARD.

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—In reply to Mr. Royle's letter in your last issue, may we have leave to state that the investigation reported in our note of July 19th was undertaken with the express purpose of meeting Mr. Royle's criticism that in cases adversely reported upon by others the operation had been incorrectly performed. The cases reported by us were selected by Mr. Royle, from a number which he examined, as likely to benefit from the operation. If, as he asserts, he chose the worst patients, it was presumably for some reason which we fail to appreciate.

As stated in our paper, the notes of our cases provided a mass of material so large that they were deemed inappropriate for publication in extenso. In reply to the points which Mr. Royle raises, we feel called upon to quote in more detail the notes of some of our patients.

Case 1.—Mr. Royle does not contest our observation that the patient was unimproved by the operation. He complains that no mention is made in our report of athetosis in this case. We have before us two neurological reports upon this patient, one by Dr. Fulton, who took part in the earlier stage of the investigations, the other by Dr. Symonds. Both observed tremor of a clonic type on attempted voluntary movement. Athetosis in our opinion was not present.

Case 2.—The selection from the notes of this case of an isolated observation recorded by one of the assistant medical officers on Feb. 25th, 1928, can be considered fortunate only as an example of Mr. Royle's singleness of vision. We print in full the pre-operative note on stance and walking, the notes of post-operative progress, and the final note on stance and walking:—

Before operation: (Note by Dr. Fulton.) "She stands unsupported some two or three seconds and then sinks backwards—sometimes with an attempt to restore balance by taking one or two steps back and usually without doing so. Supported gently by the hands (outstretched in front) she can walk slowly forwards. Turning is by a series of small turning steps, and usually ends in collapse backwards. The feet are cherry red and tend to be cold."

On June 22nd, 1927, Mr. Royle performed right lumbar ramisection; 23rd, less spasm; 24th, no increase in voluntary power; July 1st, vaso-dilatation still persists; right leg very stiff; no definite improvement; 12th, Mr Royle performed left lumbar ramisection and elongated both tendo Achillis; Oct. 18th, position of feet satisfactory; feet and hands cold and blue; Dec. 31st, feet in good position; walking not improved; Jan. 25th, 1928, walks a little slowly; Feb. 25th, feet satisfactory. *Can walk comfortably sometimes.* July 26th, discharged at request of parents; no improvement since admission.

She was admitted into Guy's Hospital in May, 1929, under Dr. Symonds, who made the following note: "Cannot stand unsupported. Supported on both sides can walk dragging right foot along ground."

It will be seen that, taken in its context, the phrase (in italics) quoted by Mr. Royle conveys a very different impression from that given in his letter.

Case 3.—We have nothing to add to the opinion already expressed that the post-operative improvement was no more than might reasonably be attributed to spontaneous recovery from an acute hemiplegia.

Case 4.—Mr. Royle complained that immediate post-operative improvement noted by him is not mentioned in our report. The immediate post-operative record reads as follows: "Mr. Royle performed right lumbar ramisectomy on May 10th, 1927, and left lumbar ramisectomy on June 22nd, 1927. He saw the patient ten hours after operation and noted improvement. A note by the assistant medical officer states that there was temporary improvement." The purpose of our investigation was to discover our own views upon the results of the operation. Mr. Royle's opinions were already well known to us.

Case 5.—In this case Mr. Royle states: "The important point is that the patient was unable to walk before operation and walked unaided three weeks after ramisection." In the preceding sentence he has quoted Mr. Trethowan's observation that before the operation the patient was "able to walk with a little help." The first half, then, of Mr. Royle's statement is on his own showing inaccurate. As to the second half, our notes show that Mr. Royle performed left lumbar ramisection on May 10th, 1927. On June 21st, the note is "walks only with assistance." On June 23rd Mr. Royle performed right lumbar ramisection. The next note on walking is Feb. 7th, 1928. Mr. Trethowan noted "walks with assistance with high-stepping gait. Both tendo Achillis should be lengthened." On March 5th, 1928, this operation was performed. Subsequent notes read: "July 17th, 1928, not walking. August 2nd, gets along quite well with a chair; gets heels to the ground. Sept. 11th, can walk a few steps by himself." From this time onward there is occasional note of improvement until on March 6th, 1929, the note is "walking with sticks." It appears from these notes that Mr. Royle's statement that the boy could walk unaided three weeks after ramisection is entirely unsupported by the facts, and that no improvement was observed until after the bilateral lengthening of the tendo Achillis performed by Mr. Trethowan nine months after Mr. Royle's final operation.

Case 6.—Mr. Royle states that this patient improved "even with regard to opening her hand." Our records, on the contrary, state under Jan. 21st, 1929, "the fingers cannot be moved voluntarily," and on March 17th, "the right arm is weak and spastic with fair power of movement in shoulder and elbow, very little in wrist, none in fingers." Our opinion, as already recorded, is that when examined on the latter date, the patient showed no improvement upon her pre-operative condition.

In reply to the concluding paragraphs of Mr. Royle's letter, we should like once more to emphasise that the purpose of our investigation was to record the results of ramisection as observed by ourselves, rather than by Mr. Royle or the patients, and we believe that the "honest seeker after truth" to whom he appeals may learn more from the report of six cases critically observed and recorded than from six hundred reviewed in the manner and spirit of Mr. Royle.

We are, Sir, yours faithfully,

C. P. SYMONDS, H. A. T. FAIRBANK,
A. S. BLUNDELL BANKART, G. PERKINS,
W. R. BRISTOW, W. GORDON PUGH,
R. C. ELMSLIE, W. H. TRETHOWAN,
E. LAMING EVANS, P. JENNER VERRALL.

Dec. 3rd, 1930.

DIAGNOSIS OF PULMONARY TUBERCLE.

To the Editor of THE LANCET.

SIR,—I venture to make two comments on Dr. Burrell's instructive lecture. First, I think that he undervalues physical signs, especially as he makes a very brief reference to a most valuable sign, the existence of a difference in expansion of the two sides. If a difference in expansion is found on comparing the two sides, it is commonly the first sign discoverable; and if the patient's history and symptoms suggest pulmonary tuberculosis, the indication for strict treatment is very definite. The different parts of the chest, back and front, as well as the costal margin and upper abdomen must be compared. In my experience it is seldom that there is no difference in a case of early pulmonary tuberculosis.

Next, Dr. Burrell speaks of "idiopathic" pleurisy being due to pulmonary tuberculosis. Much more frequently is it due to activity of glandular tuberculosis. It is true that the gland is originally infected from the lung, but the pulmonary focus may be quiet; whereas the glandular infection may be active and produce an inflammatory reaction in the pleura.

I am, Sir, yours faithfully,

CHARLES MILLER.

Harrowby Court, W., Nov. 27th, 1930.

DEATH CERTIFICATION IN CORONERS' CASES.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to an article by Mr. J. P. Hedley in your issue of Sept. 20th last, concluding with a statement that in the event of a practitioner feeling it his duty to report a death due to an abortion to the coroner "he should on no account sign the death certificate." As this instruction is contrary to the view which it has long been my duty to establish, will you kindly permit me to refer Mr. Hedley, and those of your readers who might otherwise have been disposed to take his advice, to the following paragraphs on page iii. in the book of

Medical Certificates of Cause of Death in their respective possession :—

"Some doubts have existed as to the duty of practitioners to give certificates of cause of death in a case where an inquest may possibly take place. It is desired to point out that, as the law now stands, the duty placed upon a registered medical practitioner who was in attendance upon a deceased person in his or her last illness to give a medical certificate of the cause of death to the best of his knowledge and belief, appears to be unqualified, and unaffected by the fact that he or some other person has reported the case to the coroner or that an inquest may take place.

"The practice of refraining from giving a medical certificate of cause of death when the case is being reported to the coroner was to some extent strengthened by the fear that, if a medical certificate is given, the death may forthwith be registered and the body buried before an inquest can take place. Statement A on the back of the certificate has accordingly been included to obviate any such risk. If the practitioner when giving a certificate is also reporting the case to the coroner and accordingly initials Statement A on the back of the certificate, it will be the duty of the registrar to suspend the registration of the death until he learns from the coroner whether an inquest is or is not to be held."

I am, Sir, yours faithfully,

S. P. VIVIAN,
Registrar-General.

General Register Office, Somerset House, London, W.C.2.
Dec. 3rd, 1930.

PANEL PRACTICE

Relative Sickness of Men and Women.

Sir Alfred Watson, the Government Actuary in an address to the Institute of Actuaries, on Nov. 24th, reverted to the increase in sickness claims under the National Health Insurance Act since 1921, and touched on the difficult question of the sickness rate of women. If, he said, the popular generalisation that women are subject to more sickness than men means that out of an equal number of each sex the cases of incapacity in the course of a year will be more numerous among the women than among the men, such a generalisation is fallacious so far as unmarried women are concerned. Practically the whole of the excess in the women's rate is attributable to the difference in the duration of claims. Since the unmarried woman is apparently not subject to a greater risk of becoming incapacitated for work than a man of corresponding age, it is difficult, he added, to understand why, when sickness comes, the woman's average period of incapacity should be nearly half as long again as that of a man. He went on to suggest that the reason is not physical but economic. The majority of the insured men have wives and dependent families; the majority of the unmarried insured women have no corresponding responsibilities. Apart from the immediate considerations which this difference of conditions creates, it is probable, on the whole, that the average man in industrial employment runs more risk than an insured women does of the loss of his job if he has to be long absent from work. The high rate of unemployment in many industries in which men only are employed, from which results the fact that the general rate of unemployment among men is normally about twice as high as it is among women, suggests that this may be a potent element in the case. Sir Alfred left it open whether it is to be inferred that many men return to work after sickness before they are fit for it, or whether a substantial proportion of women are apt to protract unduly their period of convalescence.

Uninsurables.

The National Medical Service Association, in a pamphlet commenting on the B.M.A. proposals for a general medical service, has pointed out one difficulty of any kind of contributory scheme. For it would exclude from its benefits a section of the population which stands in great need of medical attention. Four million persons, it is pointed out, including such types as hawkers, costermongers, cobblers, village blacksmiths, gypsies, tinkers, small shop-keepers and agricultural small-holders, whose economic position is often far inferior to that of many insured persons, have no part or lot in the present National Health Insurance, and can only be admitted by an amendment of the law bringing them in as "voluntary" contributors. Administrative difficulties in the way of securing the regular collection of contributions make illusory any hope of including the majority of these people. Contributions can be collected easily enough from the ordinary workman because the employer is obliged to deduct his share when paying wages, but such circumstances do not exist in the case, for example, of costermongers and other small entrepreneurs who have no employer and whose earnings depend entirely on their own exertions. A hawker may quite easily make £5 or £6 in one week, and only a few shillings for several succeeding weeks. He will neither attend at the Post Office each week to have his card stamped, nor commonly will he be in the position to pay a lump sum at the end of a quarter or half year. In addition, his contribution must be heavier because it must include not only his own, but the employers' share.

The N.M.S.A. is inclined to make use of the B.M.A. proposals, in spite of its deficiencies, as a step in the development of a national medical service. The importance of bringing an increasing number of the practitioners of the country into close contact with each other and with the existing public medical services cannot be over-estimated, and the scheme is regarded as shaping in this direction.

A GENEROUS GIFT TO DISTRICT NURSES.—An anonymous donor has given £100,000 as the nucleus of a fund to provide pensions for district nurses. It will be called "The 1930 Fund for Trained District Nurses." A committee to administer the fund has been formed, consisting of Sir Campbell Rhodes (Chairman), Sir William Foot Mitchell (Treasurer), Dame Maud McCarthy, Miss Musson, Miss Finch, Miss Darbyshire, Miss Cox-Davies, Miss Cockrell, Sir William Sheppard, and Mr. Arnold Herbert, K.C.

PAYMENT FOR HOSPITAL TREATMENT.—The governors of the Horton General Hospital, Banbury, have recently decided that patients with incomes not exceeding £350 a year shall pay a maintenance fee of 5s. per week, save in special circumstances when treatment will be free. Patients are admitted by a printed recommendation signed by a governor, or by a card issued by the Workpeople's Association. Accident and acute cases are admitted without formalities, and necessitous cases will be treated without payment.

ECCLES AND PATRICROFT HOSPITAL, LIMITED.—This institution has been registered as a company limited by guarantee, without share capital, with 600 members, each liable for £1 in the event of winding up. The following explanation of this step has been officially given: To recover, under the Health Insurance Act, expenses incurred in providing drugs, food, and bandages to panel patients, a hospital must be appointed panel chemists. But an unincorporated hospital is not qualified for such an appointment. When a hospital becomes a limited company it may open a dispensary and have a qualified chemist in charge, by which means it complies with the Pharmacy Acts. Then it receives the panel doctors' certificates and, having supplied the necessaries prescribed, its expenses in the matter become recoverable from health insurance funds.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

Buildings (Escape from Fire) Bill.

IN the House of Commons on Wednesday, Nov. 26th, Mr. GRAHAM WHITE asked leave to introduce a Bill to make further and better provision with respect to means of escape from buildings in case of fire. He said that the first clause provided that in the case of every new building which was more than two storeys in height or where the upper storey of any one floor was more than 22 feet from the ground there should be provided such means of escape for the persons employed therein, sleeping therein, or resorting thereto as might be considered reasonable in all the circumstances of the cases. The buildings to which these conditions should apply were tenement buildings, flats, maisonettes or buildings which were to be used as hotels, boarding houses, boarding schools, nursing homes, and the like. It was suggested that no such building should be occupied until a certificate had been given by the local authority that adequate means had been provided and that they existed in working order. The second clause provided in regard to existing buildings that if in the opinion of the local authority such building was not already provided with adequate means of escape in the case of fire they might call on the owner, by notice served in writing, to make such provision as might be considered reasonable in all the circumstances of the case, and the owner should then take the necessary steps to make provision. The third clause provided that similar conditions should apply in the case of buildings which were being converted for any of the uses described. The Bill also gave powers to local authorities to require owners to provide certain forms of mechanical sprinklers and mechanical apparatus for the extinction of fire. Anyone who was aggrieved by any provision of the Bill would have the right of appeal to a court of summary jurisdiction.

Leave was given to introduce the Bill, which was brought in and read a first time.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 26TH.

Detention of Dr. Dey.

Mr. MALONE asked the Secretary for Foreign Affairs whether he had any information concerning the detention of Dr. William Dey, a British-Canadian subject, on Oct. 21st, 1930, by the Polish authorities at Lemberg; what was the reason for the detention; and whether he was aware that Dr. Dey was refused permission to communicate with the British consul, Mr. Taylor.—Mr. HENDERSON replied: Yes, Sir. The circumstances of this case have been reported to me, and I have instructed H.M.'s Ambassador at Warsaw to make appropriate representations to the Polish Government.

Physical Fitness of Motor Drivers.

Mr. D. G. SOMERVILLE asked the Minister of Transport whether he was aware that during the past few weeks there had been an unusual demand for and distribution of motor driving licences available during 1931 as a result of the desire of many people to avoid the obligation of filling in the new licensing forms; and whether, with a view to reducing as far as possible the number of physically unfit drivers on the road before the speed limit was removed, he would take steps to obtain a declaration of physical fitness from all those who had obtained driving licences since Oct. 1st this year.—Mr. H. MORRISON replied: I am not aware that there has recently been any unusual demand for motor driver's licences. I have no power to call for a declaration of physical fitness from persons who have obtained driver's licences under the Motor Car Act, 1903.

Committee on Rural Housing.

Colonel BURTON asked the Minister of Agriculture whether he was now in a position to state the names of the committee he was appointing to inquire into the conditions of rural housing.—Dr. ADDISON replied: The members of the committee recently appointed by my right hon. friend the Minister of Health and myself, to inquire into the conditions of occupation of agricultural cottages, are as follows: Mr. W. R. Smith, Parliamentary Secretary to the Board of Trade (chairman); Mr. D. Black; Mr. G. Dallas, M.P.; Mr. H. H. George; Viscount Lymington, M.P.; Mr. J. C. McGrath; Miss E. Picton-Turbervill, M.P.

Hospital Sweepstakes.

Sir NICHOLAS GRATTAN-DOYLE asked the Prime Minister whether, seeing the success attending the Irish lottery on behalf of the Dublin hospitals, he would give facilities for the passing of legislation to legalise in this country the holding of sweepstakes or lotteries in aid of London hospitals or for kindred purposes.—Mr. MACDONALD (Prime Minister) replied: I can hold out no prospect of time being found for the discussion of this subject.

Sir N. GRATTAN-DOYLE: Is it not a fact that our laws concerning lotteries and sweepstakes are the laughing stock of the world?

Mr. MACDONALD: That question had better be addressed to the Home Office.

Mr. FOOT: Can the Prime Minister now give his attention to the request that has been made for the setting up of a select committee to deal with the whole matter of the existing gambling laws of the country?

Mr. MACDONALD: I am sorry I have not that in mind. If the hon. Member will put a question down I will give attention to the point.

THURSDAY, NOV. 27TH.

Mr. HANNON asked the Home Secretary if he proposed to introduce legislation to bring the law in this country into harmony with the law of the Irish Free State relating to hospital sweepstakes, so that British hospitals, which were in need of financial help, might benefit by the results.

Sir NICHOLAS GRATTAN-DOYLE asked the Home Secretary a similar question.—Mr. CLYNES replied: There has been no departure from the policy which has always been followed in the case of sweepstakes promoted outside this country. I am, however, fully aware that the circumstances connected with the recent sweepstake promoted in the Irish Free State call for serious and careful consideration from several points of view, but I am not at present in a position to make any statement as to the action which it may be desirable to take in the matter.

Maternity Cases in Prisons.

Viscountess ASTOR asked the Home Secretary how many babies had been born in prison in England and Wales during the 12 months ended July 31st, 1930; how many pregnant women prisoners had been transferred to outside hospitals or maternity homes for childbirth; whether any special diet was allowed to pregnant women in prison; and, if so, what was the nature of such diet.—Mr. CLYNES replied: During the 12 months ended July 31st last there were 14 births in prisons in England and Wales, and two in the Borstal Institution at Aylesbury. Special arrangements as regards diet are made in each case in accordance with the orders of the medical officer. No woman was transferred to a hospital or maternity home for childbirth and subsequently brought back to prison, but seven women were discharged from prison on that ground.

Industrial Diseases.

Mr. BROTHERS asked the Home Secretary if he would refer to the Departmental Committee appointed to inquire and report on proposals for extending or modifying the schedule of industrial diseases, under the Workmen's Compensation Act, the excess of respiratory illness amongst male cardroom workers in cotton mills.—Mr. CLYNES replied: Inquiries made by the Industrial Health Research Board at the request of the Home Office Departmental Committee on Dust in Card Rooms have established that there is a high incidence of sickness due to respiratory complaints amongst cardroom workers above a certain age, but I do not gather that there is any evidence to show that these complaints are distinguishable from the ordinary forms of respiratory disease. The Departmental Committee are, however, investigating the precise nature and cause of the sickness, and I will consider my hon. friend's suggestion when their report is received.

Inspection of Children's Homes.

Mr. SHEPHERD asked the Home Secretary the number of voluntary homes or institutions containing children and young persons not open to inspection; and the total population of such places.—Mr. CLYNES replied: I regret that I am unable to give the information asked for by my hon. friend. The Child Adoption Committee in its third and

final report, issued in 1926, drew attention to the fact that this information was not available, and recommended amendments of the Children Act which will be incorporated in the Children Bill now being prepared.

Mental Defectives.

Lieut.-Colonel FREMANTLE asked the Minister of Health whether the number of mentally deficient persons in this country had increased in recent years; if so, to what extent; and what was his present estimate of their number. —Mr. GREENWOOD replied: During the last five years the total number of mental defectives ascertained by local authorities under the Mental Deficiency Act has increased from 48,778 to 71,439—i.e., from 1·29 to 1·81 per 1000 of the total population of England and Wales. The ascertainment is not complete, and results vary in different areas. In these circumstances it is impossible to say whether the number of defectives is increasing in proportion to the total population, or to frame a conclusive estimate of the present number, but in certain areas the ascertainment by local authorities has reached 5 per 1000.

Voluntary Contributors to National Insurance.

Mr. THOMAS LEWIS asked the Minister of Health the number of persons who had become voluntary contributors under the National Health Insurance Act by virtue of the provisions of Section 21 of the Widows', Orphans' and Old Age Contributory Pensions Act, 1929.—Mr. GREENWOOD replied: The exact number is not available, but it appears from information supplied by the approved societies chiefly concerned that it is in the neighbourhood of 60,000.

Insured Persons and Continued Benefit.

Mr. THOMAS LEWIS asked the Minister of Health what action, if any, it was proposed to take relative to persons whose insurance under the National Health Insurance Acts would normally cease at the end of the present year.—Mr. GREENWOOD replied: I have summoned a meeting of the Approved Societies Consultative Council for Wednesday next to consider the matter, and after consultation with them I hope to be in a position to make a statement.

Inspection of Voluntary Maternity Homes.

Dr. BENTHAM asked the Minister of Health if all the voluntary maternity homes in receipt of a grant, paid previously by the Ministry of Health and now through local authorities, were still visited by the medical inspectors of the Ministry of Health.—Mr. GREENWOOD replied: The routine inspection of voluntary maternity homes is carried out by the responsible local authorities. The arrangements made for the training of midwives in maternity homes which are in receipt of grants from my department for that purpose are inspected periodically by a medical officer of my department, and I have retained the right to instruct my officers to visit any maternity home as occasion arises.

Red Cross Clinic for Rheumatism.

Mr. GRAHAM WHITE asked the Minister of Health if he had any information as to the progress of the work of the clinic for the treatment of rheumatism established by the British Red Cross Society; and if he was taking any steps to encourage the establishment of similar institutions in other localities.—Mr. GREENWOOD replied: I understand that this clinic is making satisfactory progress. I am always prepared to consider any schemes put forward by local authorities or otherwise for the treatment of rheumatism.

Statistics of Casuals and Lunatics.

Mr. SHEPHERD asked the Minister of Health why the monthly issue of statistics showing the numbers of casuals and lunatics had ceased.—Mr. GREENWOOD replied: My hon. friend is under some misapprehension. There has been no change in regard to the issue of these statistics. Figures for casuals have been issued in quarterly statements since 1919, and this practice is being continued. The number of lunatics on any day other than Jan. 1st has not been ascertained for many years. Patients in mental hospitals are no longer deemed to be in receipt of poor relief, and the numbers of such persons will not appear in future issues of the quarterly statement.

Deaths from Small-pox.

Mr. GROVES asked the Minister of Health whether any deaths occurred amongst the small-pox cases quoted in columns A, B, C, and D of the report of the chief medical officer; and, if so, what was the number, also the ages, in each class respectively.—Mr. GREENWOOD replied: 13 deaths occurred among the small-pox cases tabulated on p. 70 of the report of the chief medical officer of my department for the year 1929. These deaths, following the classification adopted in the tabular statement, were distributed as follows: Col. A (successfully vaccinated), 3 deaths of persons aged 14, 34, and 42 years respectively; Col. B (successfully revaccinated), no deaths; Col. C (unvaccinated), 9 deaths of persons aged 3 days, 3 weeks, 1 month, 8 months, 2, 9, 13, 37, and 63 years respectively; Col. D (vaccinal condition doubtful), 1 death of a person aged 74 years.

Royal Veterinary College.

Major CARVER asked the Minister of Agriculture what institutions for the promotion of veterinary science existed in the United Kingdom other than the Royal Veterinary College; whether his attention had been called to the danger that the College might have to close down for want of financial support; and whether, to avert this, he was able to offer more help than he had hitherto promised.—Dr. ADDISON replied: Besides the Royal Veterinary College, the following institutions in Great Britain provide veterinary education: Liverpool University; the Royal (Dick) Veterinary College, Edinburgh; and the Glasgow Veterinary College. In addition, the University Department of Animal Pathology at Cambridge, the Ministry of Agriculture's Veterinary Laboratory at Weybridge, and the Station of the Scottish Animal Diseases Research Association, near Edinburgh, exist for the purpose of research in animal diseases. I am fully acquainted with the financial position of the Royal Veterinary College. As the hon. and gallant Member is no doubt aware, the Government have offered to the College on certain conditions a grant of £150,000 towards a scheme of reconstruction costing £250,000, and are further prepared to contemplate an increase of the present maintenance grant when the reconstruction is completed. I sincerely trust that, with the help which the College may be able to obtain from other sources, these grants will be sufficient to avert the closing down of the College, an event which I should deeply deplore.

MONDAY, DEC. 1ST.

Insured Persons and Change of Panel Doctor.

Mr. RHYS DAVIES asked the Minister of Health whether he had now concluded his negotiations with doctors in panel practice and the approved societies for a variation of the period during which an insured person might change his panel doctor; and, if so, what arrangements had been arrived at.—Mr. GREENWOOD replied: On the question of principle, I have come to the conclusion that I ought to modify the relevant part of the Medical Benefit Regulations so as to require a longer period to elapse before effect is given to a notice by an insured person of his desire to transfer to another insurance doctor. Details of the procedure will be discussed with the representative bodies concerned as soon as possible.

Poison Gas Experiments.

Mr. FREEMAN asked the Secretary for War what were the positive tests of demonstrating the comparative effects of poison gases on human beings and living animals at present being pursued at the chemical warfare research departments. —Mr. T. SHAW replied: Examination of human beings who were gassed during the war and of animals subjected to experiment has shown essential similarities. From this it is deduced that protective and curative measures found effective in the case of animals will be applicable in the case of human beings. Tests, within the limits necessary to ensure that the volunteers come to no harm, are being carried out on the lines referred to in my answer of Nov. 25th. For example, contaminated materials, which have been treated for the purpose of cleansing the material from contamination, are brought into contact first with animals and then with human beings.

Leprosy in India.

Major GRAHAM POLE asked the Secretary for India, in regard to the measures being taken in India to avert the spread of leprosy, if he would give information showing in which provinces leprosy survey parties had been set up and village clinics opened with the support of the Government.—Mr. WEDGWOOD BENN replied: Leprosy surveys have been carried out in Bihar and Orissa, the Central Provinces, Madras, and in parts of Bengal, and leprosy clinics have been established by the local authorities in the areas covered by these surveys. In addition, numerous clinics have been opened in other parts of India by doctors trained in leprosy treatment during the last few years.

TUESDAY, DEC. 2ND.

Accidents to Boys in Mines.

Mr. FREEMAN asked the Secretary for Mines whether, in view of the fact that one-fourth of the boys under 16 years employed in mines were killed and injured in 1929, he would consider the suggestions put forward in the Northern Mines' Report for 1927 dealing with haulage accidents to boys under

16; whether he could offer any explanation of the high rate of fatal and non-fatal accidents to such boys from falls of ground in the South Wales coalfield; and whether he would consider adopting the example of Germany, mentioned in the 1927 Northern Mines' Report, in regard to the prohibition of boys under 16 from working underground, and the systematic training till that age on the surface, and over that age, till they were 18, below ground.—Mr. E. SHINWELL replied: The suggestions contained in the Report of H.M. Divisional Inspector of Mines for the Northern Division for 1927 relating to accidents to boys are engaging my serious attention, and while I cannot hold out any prospect of legislation under the present conditions of the mining industry, I shall do everything I can to bring to the notice of the industry the necessity for special measures to deal with the problem. With regard to the second part of the question, the high rate of accidents from falls of ground to boys in South Wales is due to the long-established custom in that district whereby boys start work at the coal face as colliers' helpers. Their initial employment on haulage work, as in other districts, is not practicable owing to the size of the horses and trams in use.

Physical Tests for Army Recruits.

Mr. LOUIS SMITH asked the Secretary for War what was the present shortage in the regular forces as a result of unsatisfactory recruiting returns; how many men had offered their services in each of the past 12 months; and how many had been rejected as physically unfit.—Mr. T. SHAW replied: The net shortage of warrant officers, non-commissioned officers, and men in the Regular Army, including the British Army in India, on Nov. 1st was approximately 8700. As regards the second and third parts of the question, records are not avaiable at the War Office to show the number of recruits rejected month by month on medical and physical grounds, but the total number of persons served with notice papers during the recruiting year ended Sept. 30th last, was 66,717, of whom 26,550 were finally approved; 35,425 were rejected on medical or physical grounds.

Mental Condition of Scottish Offenders.

Mr. STEPHEN asked the Secretary for Scotland the number of persons deprived of their liberty, through being incapable of pleading when charged with an offence, who had been certified sane for one year, two years, and three or more years, respectively.—Mr. ADAMSON replied: On Nov. 17th, 1930, there were ten inmates of the Criminal Lunatic Department who had been reported by the medical superintendent as being of sound mind for three years or more, one as being of sound mind for two years, and one as being of sound mind for one year. Of these 12 inmates, three were continuously detained in the institution during the respective periods in question, and nine had been at liberty under conditions during part of these periods.

Medical Examination of Pensioners.

Major CARVER asked the Minister of Pensions how many permanent awards had been made in the last year, and how many men were being re-boarded for medical examination; and whether he would consider the desirability of now making all awards permanent.—Mr. ROBERTS replied: During the 12 months ending September last, some 26,300 final awards were made. The number of officers and men medically re-examined at the instance of the Ministry has been greatly reduced, and at the present time is on an average not more than about 300 a week. I have full sympathy with the hon. and gallant Member's desire that medical examination should be reduced to the minimum possible. While there would be no power, nor would it be in the best interests of pensioners, to make final awards in all cases without regard to whether they were suitable or not, it is the policy of the department to give prolonged awards wherever justifiable.

MEDICAL NEWS

University of Oxford.

On Nov. 22nd the following degrees were conferred:—

D.M.—T. C. Hunt and O. R. Tisdall.

B.M.—J. N. O'Reilly.

University of Dublin.

At recent examinations in the School of Physic, Trinity College, the following candidates were successful:—

FINAL EXAMINATION FOR M.B., B.CH., AND B.A.O.

Medicine.—G. F. Ennis, D. J. O'Ryan, William Caldwell, T. H. Dockrell, C. H. Adderley, H. H. G. Dorman, Daniel Nolan, Charles Bowesman, C. M. Elliott, A. J. O'Connor, Kathleen A. Wilson, and Charles Ryan.

Surgery.—G. F. Ennis, D. J. O'Ryan, W. A. Robinson, E. S. Duthie, H. H. G. Dorman, N. A. Kinnear, William Caldwell, J. B. Scott, F. P. FitzGerald, D. G. Kennedy, and H. S. North.

Midwifery.—*Elizabeth K. Roberts, *Margaret D. Gregg, *Marjorie L. Campbell, *H. F. G. Irwin, I. G. L. Ford, J. C. M. Brambell, H. V. Tighe, W. A. Hill, J. G. Wilson, T. F. O'Donnell, E. S. Samuels, T. M. R. Ahern, M. G. Leane, T. J. O'Sullivan, F. C. Jackson, N. H. Leask, R. C. Sutton, Edward Morrison, J. A. Page, and D. H. S. Boyd.

* Passed on high marks.

University of London.

In the recent examination for the Diploma in Psychological Medicine Dr. J. W. M. Alexander was the successful candidate (with special knowledge of psychiatry).

The Paul Philip Reitlinger prize, of the value of £30, offered this year for the best essay embodying the result of research on a medical subject, has been awarded to Joseph Adler, a student of King's College and Charing Cross Hospital Medical School, for an essay on The Action of Histamine on Gastric Secretion after Partial Gastrectomy.

Fellowship of Medicine and Post-Graduate Medical Association.

On Monday, Dec. 8th, at 4.0 P.M., at 11 Chandos-street, London, W., Dr. Philip Figdor will lecture on Recent Advances in Osteo-Arthritis. Special free demonstrations will be given during the week as follows: at 2 P.M. on Monday, Dec. 8th., at the Children's Clinic, by Dr. Bernard Myers on Modern Methods of Infant Feeding; at 2 P.M. on Tuesday, the 9th, at the Royal Northern Hospital, by Mr. Kenneth Walker on Urological Cases; at 2 P.M. on Thursday, the 11th, at the Metropolitan Hospital, by Dr. P. Hamill in the out-patient department. The list of special courses for 1931 is now published, and copies may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

University of Aberdeen.

On Nov. 26th the Diploma in Public Health was conferred on Dr. Margaret F. Fraser.

Pharmaceutical Society of Great Britain.

At a meeting to be held at the Society's House, 17, Bloomsbury-square, London, W.C., at 8.30 P.M., on Tuesday, Dec. 9th, Prof. D. M. S. Watson, F.R.S., will lecture on Endocrine Organs.

North Staffordshire Orthopædic Hospital.

Lord Ednam last week laid the foundation-stone of extensions to the orthopædic hospital of the North Staffordshire Cripples Aid Society at Hartshall, Stoke-on-Trent. The new buildings, which will cost £20,000, are to be a memorial to Lady Ednam, the former president of the society, who was killed a few months ago in an aeroplane accident.

British College of Nurses.

Princess Arthur of Connaught, S.R.N., presided at this college, on Nov. 26th, at a lecture by Miss Isabel Macdonald on Nursing History. After referring to the traces of nursing history in the ancient civilisations of India, Persia, Chaldea, Egypt, Greece, and Rome, Miss Macdonald showed a series of lantern slides illustrating the work of the Church and of various saints who had made it a part of their mission to care for the sick. These included the Empress Helena, who, with her son Constantine (A.D. 272–337), built shelters for strangers and pilgrims; Matilda, consort of King Stephen, who founded the hospital of St. Catherine by the Tower, Queen Eleanor, first consort of Edward I., and Queen Philippa of Hainault, consort of Edward III., who were also connected with this hospital, of which the Queen's Institute of District Nursing was the modern exposition. Their record inspired Miss Macdonald to search the annals of Scottish history to find a royal Scottish nurse who could be placed with them. She found her in St. Margaret, consort of Malcolm Canmore, who was renowned for her beneficent work for the sick and poor. Many further pictures brought the history of nursing down through the centuries to the time of Elizabeth Fry, Friederike and Caroline Fliedner, and Florence Nightingale, and the movement inspired and guided by her towards higher education and nursing knowledge. This was followed, said Miss Macdonald, by the movement for professional organisation, through State Registration, and the International Council of Nurses, the successful life-work of Mrs. Bedford Fenwick, President of the British College of Nurses.

Sweepstakes for Hospitals.

The board of management of Manchester Royal Infirmary has decided to call a conference of 50 governors, representing the 25 hospitals in Manchester and Salford, to discuss whether sweepstakes are a desirable method of raising funds.

A Hospital in Danger.

The Victoria Infirmary, Northwich, Cheshire, is said to be in some danger of subsidence in consequence of brine pumping. Portions of the park in which it stands are crumbling, and a fissure has appeared close to the hospital. Meanwhile there is heavy pressure upon the accommodation, and many patients have to be sent to Manchester and Liverpool institutions. The governors are considering the possibility of providing a new building outside the brine-pumping zone.

The Hospital Saving Association.

The annual report of this Association shows that during the year ending July 31st 1275 new groups were formed, and that the number of contributors increased by 158,431. There are now 7986 groups and 810,444 contributors. The year's contributions amounted to £438,354, as compared with £320,714 in the previous year. During the year 238,929 contributors and dependents, of whom 44,340 were in-patients, were treated at voluntary hospitals on the list of the Association. The number of days of in-patient maintenance was 911,873, giving an average length per case of 20·58 days. The total payment for hospital services for the year is £325,781.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Dec. 8th.—5 P.M., UNITED SERVICES. Paper: Major-General H. Ensor: The Medical Services of a Division on Active Service.

TUESDAY.—5 P.M., THERAPEUTICS. Discussion on The New Mercurial Diuretics and Their Uses in Medicine, with special reference to Novasurol and Salyrgan. Opener: Dr. Evan Bedford. Other speakers will also take part. MEDICINE. Members of this Section are specially invited to attend and take part in the discussion. 8.30 P.M., PSYCHIATRY. Paper: Dr. N. H. M. Burke: Stigmata of Degeneration in Relation to Mental Deficiency.

THURSDAY.—8.30 P.M., NEUROLOGY. (Cases at 7.45 P.M.) Clinical Meeting at the National Hospital, Queen-square, London, W.C.1.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Cases: Mr. Cecil P. G. Wakeley: 1. Calcified Endothelioma of the Brain. 2. Acromegaly, Treated by the Introduction of Radon Seeds into the Pituitary Body. 3. Vascular Tumour of the Brain after Operation (shown at the October meeting). Sir James Dundas-Grant: 4. Headache Apparently Due to Enlargement of Middle Turbinated Body, Relieved by Intranasal Operation. Dr. Geoffrey Evans: 5. Bronzed Diabetes. Dr. B. Barling: 6. Arterial Obstruction in the Lower Limbs Treated with Angioxyl, &c. Dr. A. P. Cawadias and Dr. F. Parkes Weber: 7. Syndrome of Obliterating Arteritis of the Lower Limbs Treated with Angioxyl and Various Physical Agents. Dr. F. Parkes Weber: 8. Hæmochromatosis with Diabetes Mellitus, Hepatic Cirrhosis and Ascites. Dr. E. Stolkind: 9. Parkinsonian Syndrome showing Peculiarities of Speech Records. 10. Parkinsonian Syndrome (Post-Encephalitic Paralysis Agitans) with Affection of the Speech as First Manifestation. Dr. L. Hartston: 11. Still's Disease. Dr. Donald Hunter: 12. Hyperparathyroidism; Generalised Osteitis Fibrosa with Multiple Osteoclastomata. Dr. Philip Ellman: 13. Pulmonary Asbestosis. 14. Pulmonary Tuberculosis with Absence of Left Pectoral Muscle and Tuberculous Ulcer of Tongue. Other cases will be shown. 5 P.M., OPHTHALMOLOGY. Clinical Meeting at the Central London Ophthalmic Hospital, Judd-street, W.C. Tea at 4.30 P.M. Cases: Mr. J. H. Doggart: 1. Complicated Cataract of Obscure Origin. 2. Old Mustard Gas Burns. Other cases will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Dec. 8th.—8.30 P.M., Discussion on The Pathological Conditions of the Eye Due to Inflammatory Changes in Other Parts of the Body, to be introduced by Mr. A. F. MacCallan, followed by Mr. Ernest Clarke.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W

THURSDAY, Dec. 11th.—7.45 P.M., Demonstration by Sir Aldo Castellani. 8.15 P.M., Major G. Shanks, I.M.S: A Demonstration (with lantern slides) on the Pathology of Epidemic Dropsy in Bengal; and Sir Aldo Castellani: A Paper on Minor Tropical Diseases (illustrated by lantern slides).

HARVEIAN SOCIETY.

THURSDAY, Dec. 11th.—8.30 P.M. (at Town Hall, Paddington Green, Harrow-road, W.), Dr. H. W. Barber: Skin Lesions of Interest to the General Practitioner.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Dec. 12th.—8.45 P.M. (at the Miller General Hospital, Greenwich-road, S.E.), Mr. A. J. Walton: The Neuro-muscular Obstructions of the Intestinal Tract (Purvis Oration).

THE EUGENICS SOCIETY.

WEDNESDAY, Dec. 10th.—8.30 P.M. (at the Rooms of the Linnean Society, Burlington House, W.), Heredity in Education. Speakers: Dr. Maitland Radford and others.

BIOCHEMICAL SOCIETY.

FRIDAY, Dec. 12th.—5 P.M. (in the Department of Physiology, London Hospital), Communications and Demonstrations.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

MONDAY, Dec. 8th, and following WEDNESDAY.—4 P.M., Mr. F. W. Twort: Diseases of Bacteria. (Free lectures.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Dec. 8th to SATURDAY, Dec. 13th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon. at 4 P.M., a free lecture by Dr. Philip Figdor on Recent Advances in Osteo-arthritis.—CHILDREN'S CLINIC, Cosway-street, Edgware-road. Mon. at 2 P.M., special demonstration on Modern Methods of Infant Feeding by Dr. Bernard Myers. No fee.—ROYAL NORTHERN HOSPITAL, Holloway-road. Tues. at 2 P.M., special free demonstration of Urological Cases by Mr. Kenneth Walker.—METROPOLITAN HOSPITAL, Kingsland-road. Thurs., at 2 P.M., special free demonstration in Out-patient Department by Dr. P. Hamill.—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street. Special course in Neurology at 5 P.M. daily.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars. Afternoon course in Dermatology.—INFANTS HOSPITAL, Vincent-square, Special afternoon course.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Dec. 8th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Dec. 11th.—9 P.M., Dr. J. A. Drake: Some Common Skin Diseases, illustrated with Epidiascope.

UNIVERSITY COLLEGE, Gower-street, W.C.

MONDAY, Dec. 8th.—4.15 P.M., Dr. Charles Singer: Eighteenth Centenary of the Birth of Galen.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.

THURSDAY, Dec. 11th.—5 P.M., Mr. A. L. Walker: Management of Toxæmias.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Dec. 9th.—5 P.M., Dr. A. C. Roxburgh: Eruptions Due to Physical Agents.

THURSDAY.—5 P.M., Dr. W. N. Goldsmith: Pigmentation of the Skin.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Dec. 10th.—4 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Dec. 10th.—4.30 P.M., Dr. Jenner Hoskin: Value of Complete Cardio-analysis in Genito-urinary Operations.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Dec. 12th.—4 P.M., Mr. Lowndes Yates: The Indications for Removal of Tonsils.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Dec. 9th.—3.15 P.M., Mr. G. G. Penman: Fundus Changes in Diseases which Do Not Directly Affect the Eye.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Dec. 10th.—4 P.M., Sir Hubert Bond: Prevention of Mental Illness.

THURSDAY.—4 P.M., Dr. Marie Stopes: Positive and Negative Control of Conception in its Various Technical Aspects.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Dec. 10th.—3.30 P.M., Mr. P. V Cole: Some Preventive Aspects of Cancer.

NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY, Aldwych House, Aldwych, London, W.C.

THURSDAY, Dec. 11th.—6 P.M. (in Room 9 at the London School of Economics, Houghton-street, Aldwych, W.C.), Mr. W. J. Pinard: Tests of Character; Mr. C. B. Fox: Industrial Psychology Applied to the Blind.

ANCOATS HOSPITAL, Ancoats, Manchester.

THURSDAY, Dec. 11th.—11 A.M., Mr. E. E. Hughes: Clinical Demonstration; 4.15 P.M., Dr. A. Renshaw: The Use of Vaccines.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Dec. 9th.—4.15 P.M., Mr. A. H. Burgess: The Early Diagnosis of Breast Carcinoma.

FRIDAY.—4.15 P.M., Mr. Gordon Whitehead: Treatment of the Common Complications of Gonorrhœa.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.

FRIDAY, Dec. 12th.—3.30 P.M. (at the Royal Infirmary), Mr. Connell: Syphilis as it Affects Bones and Joints.

Appointments

Middlesex Hospital: BONNEY, V., M.D. Lond., F.R.C.S. Eng., Obstetric and Gynæcological Surgeon; RIVETT, L. C., M.Chir. Camb., F.R.C.S. Eng.; and ROQUES, F. W., M.D. Camb., F.R.C.S. Eng., Asst. Obstetric and Gynæcological Surgeons.

Certifying Surgeons under the Factory and Workshop Acts: FRASER, D. (Dursley, Gloucester); PIGOTT, E., M.B., Ch.B. Manch. (Manchester West Central); and SULLIVAN, J., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S.G. (Ebbw Vale).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Jun. Ophth. Surgeon.
Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.
All Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road. H.S. At rate of £150.
Birkenhead General Hospital.—Sen. H.S. £150.
Bridge of Weir Sanatorium, Renfrewshire.—Res. Asst. M.O. At rate of £200.
Burnley, Victoria Hospital.—Two H.S.'s. Each at rate of £150.
Bury Infirmary, Lancashire.—3rd H.S. At rate of £150.
Cheshire Joint Sanatorium, Market Drayton, Salop.—H.P. £250.
Carlisle, Cumberland, and Westmorland Mental Hospital, Garlands.—Jun. Asst. M.O. £350.
Chester Royal Infirmary.—H.S. £150.
Connaught Hospital, Orford-road, Walthamstow, E.—Sen. Res. H.S. At rate of £150.
Derbyshire Royal Infirmary.—Non.-Res. Radiologist. £100.
Dreadnought Hosp. Greenwich.—H.P. and H.S. At rate of £110.
Dunedin, New Zealand, Otago University.—Prof. of Midwifery and Gynæcology. £2000.
Dunfermline, West Fife Infectious Diseases Joint Hospital.—Asst. M.O. £400.
East London Hospital for Children, &c., Shadwell, E.—H.S. At rate of £125.
Essex County Council.—Asst. County M.O.H. £500–£600.
Evelina Hospital for Children, Southwark, S.E.—Hon. Dental Surg.
Exeter, Royal Devon and Exeter Hospital, Pathological Department.—Pathologist. £500.
Glasgow Corporation, P.H. Dept.—Deputy M.O. for Mental Services. £1000.
Grocers' Company, Grocers' Hall, E.C.—Research Scholarships. £300.
Hampshire County Council.—Asst. County M.O. £600.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, St. John's Wood, N.W.—Gynæcological Surg.
Hull Royal Infirmary.—H.S. to Ophthalmic, &c. Depts. At rate of £150.
Hull Royal Infirmary, Sutton Branch.—H.P. At rate of £160.
Ilford, King George Hospital.—Hon. Physician.
Indian Medical Service.—Commissions.
Jersey General Hospital and Poor-law Infirmary.—Res. M.O. £200.
Kidderminster and District General Hospital.—H.S. £150.
Liverpool University.—Jun. Lecturer in Dept. of Pathology. £300.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. At rate of £150.
London Hospital, E.—Surg. 1st Asst. and Reg. £300.
Manchester, Ancoats Hospital.—H.S. for General Surgery, &c. At rate of £100. Med. and Surg. Registrars. Each £100. Also Orthopædic Reg. (part-time). £25.
Metropolitan Hospital, Kingsland-road, E.—Asst. M.O. to X-ray Dept.
Miller General Hospital, Greenwich-road, S.E.—H.P. and H.S. At rate of £125. Also Out-patient Officer. At rate of £150.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H.S. At rate of £100.
New Zealand, Hawkes Bay Hospital, Napier.—Pathologist. £750.
Nottingham City Infirmary, Hucknall-road.—Two M.O.'s. Each £350.
Oswestry, Shropshire Orthopædic Hospital.—Asst. Orthopædic Surgeon. £450.
Perth Royal Infirmary.—Res. Jun. H.S., and H.P. Each £100.
Pontefract General Infirmary.—H.S. £150.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Hon. Anæsthetists. Hon. Dental Surgeon. Hon. Psychiatrist. Also Res. Anæsthetist, and Asst. Res. M.O. At rate of £100 and £80 respectively.
Queen's Hospital for Children, Hackney-road, E.—H.S. At rate of £100.
Radium Institute, Riding House-street, W.—H.S. At rate of £150.
Reading, Royal Berkshire Hospital.—H.P., and Two H.S.'s. Each at rate of £150.
Royal Dental Hospital of London, 32, Leicester-square, W.C.—Hon. Radiologist and Lecturer in Radiology.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.
Royal Waterloo Hospital for Children and Women.—Res. H.S. At rate of £100.
Ruthin Castle, North Wales.—Jun. Res. Physician.—£200.
St. Mary's Hospital, W.—Surgical Registrar. £200.
St. Peter's Hospital for Stone, &c., Covent Garden, W.C.—Clin. Assts.
St. Thomas's Hospital.—Chief Asst. in Physico-therapy Dept. £250.
Salford Royal Hospital.—Res. Surg. O. At rate of £200. Also H.P., Two H.S.'s, and Cas. H.S. Each at rate of £125.
Salisbury, General Infirmary.—H.S. £150.
Sheffield Royal Hospital.—Ophth. H.S. Also Res. Anæsthetist. Each at rate of £80.
Sheffield Royal Infirmary.—Ophth. H.S. £80–£100. Clin. Asst. to Ear, Nose, and Throat Dept. £300. H.P., H.S., Asst. Aural and Ophth. H.S. Also Asst. Cas. O. All at rate of £80.
South London Hospital for Women, South Side, Clapham Common, S.W.—Three H.S.'s. Each at rate of £100.
South Shields, Harton Hospital.—Two H.S.'s. Each £120. Also X Ray and U.V.R. Operator. £250.
Staffordshire County Council.—Asst. Bact. and Path. £600.
Talgarth, Breconshire, South Wales Sanatorium.—Asst. Res. M.O. £250.
Tilbury Hospital, Essex.—H.S. At rate of £150.
Watford, Herts, Peace Memorial Hospital.—Res. Surg. O. At rate of £150.
West African Medical Service.—Medical Officers.
West London Hospital, Hammersmith-road, W.—Non-Res. Cas. O. £250. Also H.P., H.S., and Aural and Ophth. H.S. Each at rate of £100.
Weston-Super-Mare General Hospital.—Res. H.S. At rate of £150.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Surg. Reg.
Wigan, Royal Infirmary.—H.S. At rate of £150.
Woking and District Victoria Hospital.—Res. M.O. At rate of £100.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. At rate of £100. Also Part-time Pathologist, £300.
Worcester General Infirmary.—Jun. Res. M.O. £120.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Chipping Campden (Gloucestershire); Llandovery (Carmarthenshire); and at Stromness (Orkney).

Births, Marriages, and Deaths

BIRTHS.

DALTON.—On Nov. 11th, at Fonnereau-road, Ipswich, the wife of Dr. C. H. C. Dalton, of a son.
DAVENPORT.—On Nov. 24th, at Adelaide-road, N.W., the wife of Robert Davenport, F.R.C.S., of a daughter.
HARRIS.—On Nov. 17th, at a nursing home, Muswell Hill, the wife of Dr. J. R. Harris, of a son.
ILLINGWORTH.—On Nov. 26th, at Palmerston-place, Edinburgh, the wife of C. F. W. Illingworth, F.R.C.S., of a son.
INKSTER.—On Nov. 15th, at Middlesbrough, the wife of John Inkster, M.D. Aberd., M.R.C.P. Lond., of a daughter.
NELSON.—On Nov. 24th, at Harley-road, N.W., the wife of H. P. Nelson, F.R.C.S., of a daughter.
PATERSON.—On Nov. 20th, at Chatfield, Parkstone, the wife of Dr A. R. Paterson, of a son.
SMITH.—On Nov. 26th, the wife of Dr. Wilson Smith, Sunbury-gardens, Mill Hill, N.W., of a daughter.
STOCKER.—On Nov. 21st, at Lancaster, the wife of Major C. J. Stocker, I.M.S., of a son.

MARRIAGES.

MAITLAND—WEMYSS.—On Nov. 24th, at St James's Church, Cupar, Fife, David Randolph Maitland, M.B., Ch.B., to Barbara Mary Carnegie, only daughter of Mr. E. H. Wemyss, of Kirkton, Fife, and Mrs. Wemyss, at Myres Castle, Auchtermuchty, Fife.

DEATHS.

GALE.—On Nov. 23rd, at Stuston Lodge, Diss, Annabella Murdoch Gale, M.D., B.Sc.
HINGSTON.—On Nov. 28th, at a nursing home, suddenly, Richard Hingston, M.R.C.S., L.R.C.P., late of Liskeard, Cornwall, aged 71.
HORWOOD.—On Nov. 16th, at Smallburgh Rectory, Norwich, Oswald Ryle Horwood, Clerk in Holy Orders, Physician and Surgeon.
MAYSTON.—On Dec. 1st, at Upper Clapton-road, John Harry Mayston, M.R.C.S., L.R.C.P., in his 46th year.
MILLER.—On Nov. 27th, at Cheviot, Neasden, Walter Frederick Miller, M.B., B.S., late of Wainfleet, aged 59.
NICHOL.—On Nov. 28th, suddenly, at Ethelbert-crescent, Margate, Frank Edward Nichol, M.B., B.Ch., J.P., aged 69 years.
SHAW.—On Nov. 25th, Dr. Arthur Hemans Shaw, of Cranbrook, Kent, aged 70.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

PITFALLS IN THE NEW MOTORING LAW.

THE passing of the Road Traffic Bill, 1930, has confronted every motorist in the country with a radical change in the motoring law. Great efforts have been made by the press, assisted by competent lawyers, to prepare them for their new duties, but there must be many motorists still who would not do very well in an examination on the subject. One of the latest of the expositions was given on Friday last to the Solicitors' Managing Clerks' Association by Mr. C. Doughty, K.C., who demonstrated a few traps which possibly have escaped the notice of other advisers. One of the most serious of these for the ordinary owner-driver is contained in the provision which lays down that any person who gives false information for the purpose of obtaining a licence or certificate is liable to a fine of £50 or four months' imprisonment. "Unfortunately,"—to quote the *Mikado*—"there is not a word about a mistake, or not knowing, or having no notion. There should be, of course, but there isn't." The section does not contain the word "wilfully," and an offender will be liable to the penalty for an innocent mistake made by himself or—what is more likely—by an agent. There will be plenty of scope for argument over the question of what information is material and, as Mr. Doughty said, what time must elapse before a former accident may be discreetly and safely forgotten.

The section governing the information that must be contained in the certificate of insurance is not so Draconic, and the responsibility lies chiefly with the company. The motorist should remember that he must carry this document with him whenever he takes the car out, and that he is bound to produce it, not only on the demand of a policeman, but whenever he is requested to by any person who may reasonably make the request. The provision is apparently designed to enable interested parties to ascertain whether the car is being driven under the conditions of the policy, or by a person entitled to drive in accordance with it. The certificate, according to the Act, must contain particulars of the limitations on the use of the car, such as those prohibiting its use for trade purposes or speed testing. Mr. Doughty said that it was probably unnecessary to name every person who was covered against third party risks by the policy, and that the law would be satisfied if the class of person were named; for example, relatives, friends, or servants.

The Act recognises three forms of unlawful driving: reckless or dangerous driving, for which the penalty is £50 or four months for the first offence; a new offence called careless driving; and a breach of the speed limit, which is not to be imposed on private cars. A driver charged with careless driving may be convicted of dangerous driving, even though the substantive evidence is that he was going too fast, if other circumstances are proved that aggravate the offence—such as the presence of cross-roads or the possibility (not the fact) of other traffic being in the vicinity. Dangerous driving being an indictable offence, it is therefore open to a person accused of one of the minor offences to elect to be tried by a jury. In police-courts it is probable, said Mr. Doughty, that a separate summons will be issued for each charge; the driver will then presumably plead guilty to the lesser offence in the hope of escaping the consequences of the greater.

Mr. Doughty pointed out a quaint possibility arising from the expression "under the influence of drink or drugs." Since the conjunction "or" presumably creates two mutually exclusive offences, it will be a good defence when charged with drunkenness to plead the influence of drugs. Both Mr. Doughty and Mr. Justice Swift, who took the chair, anticipated a considerable increase in motor-car litigation and prosecution. Motorists will be well-advised to proceed with very great caution for a considerable time after the new legislation comes into force.

CECIL HOUSES FOR HOMELESS WOMEN.

ON Nov. 19th, Mr. Ramsay MacDonald opened the Fourth Cecil House at 179, Harrow-road, London, W. This new public lodging-house accommodates 60 women and 17 babies, with a special sitting-room and dormitory for the mothers and children. Since the first house was opened in 1927 over 148,015 beds and 17,956 cots have been occupied. Nevertheless, it is stated that the supply by no means equals the demand and that each week some 40 to 80 women have to be turned away through lack of room. Once the initial expenditure—purchase of freehold, reconstruction, equipment—is defrayed from moneys subscribed by the public each house is entirely self-supporting. The aim is to establish another house as soon as possible in order to meet the needs of winter. Particulars may be had from the honorary organising secretary, Mrs. Cecil Chesterton, at the offices at 11, Golden-square, W.1.

CHOCOLATES.

WE have received from Messrs. Cadbury Bros., Ltd., an assortment of their new productions, timed no doubt to coincide with the Christmas season. The collection of sweetmeats entitled "Golden East Assortment" is likely to prove a popular present. Among other delicacies, new or put up in a new way, may be mentioned the Brazil-nut milk chocolates, Princess Elizabeth chocolates, and the Carnival chocolates, all of which are packed in appropriate fashion to form cadeaux. This packing of what the manufacturers call "the silent theatre box," has been devised to meet the criticisms of playgoers who complain of the rustling of receptacles for sweetmeats. The chocolates are packed between non-rustling paper, and a pad enclosed in cellophane is fixed inside the lid. The lid itself is covered in cellophane and need not be broken when opening, as a narrow seal can be torn noiselessly to free a hinged lid.

A selection of the firm's well-known wafer biscuits has also reached the office, with sample tins of Bourneville cocoa and cup chocolate.

AN ECCENTRIC.[1]

THE biography of Ronald Firbank has been sent to THE LANCET for review, presumably because the author, or some of those who supplied personal reminiscences in elucidation of the subject, believed that Firbank's life was of medical interest. A more charitable view can be taken, and we may hold that we have here an example of eccentricity of conduct; and where this may begin is often hard to say, while where it may reach a stage to which the term is no longer applicable, is still harder to define. It is made very clear in the book that Firbank was his own enemy and a very uncomfortable friend, while the comments on his neglected writings will arouse curiosity.

APPENDICITIS AMONG THE CHINESE.

THE popular opinion that Chinese are little susceptible to appendicitis—less susceptible than Europeans or Americans—has been again submitted to examination, this time by Dr. J. Heine, pathologist during 1928–30 to the Tung-Chi University and the Paulun Hospital at Shanghai. His results appear as a supplement to the *Archiv für Schiffs- und Tropen-Hygiene* of Leipzig. He concludes that appendicitis is no rare disease among Chinese, but that they are less

[1] Ronald Firbank, a memoir by Ifan Kyrle Fletcher, with personal reminiscences by Lord Berners, Augustus John, V. B. Holland, and Osbert Sitwell, with portraits by Alvara Guevara, Augustus John, R. A., Wyndham Lewis, and Charles Shannon, R.A. London: Duckworth, 1930.

apt than others to consult European doctors about it and to undergo operation. This conclusion accords with the opinion of Dr. Elsa Uhlenhuth quoted in THE LANCET last year (1929, i., 618). Dr. Heine had three sources of information. Among 856 specimens sent him after operations on Chinese, there were 37 appendices, of which 36 were inflamed (4·2 per cent.); while among 185 specimens sent him after operations on Caucasians there were 40 appendices, of which 32 (17 per cent.) were inflamed. He made 32 post-mortem examinations on Chinese, aged from 2 to 55, and examined all the appendices, naked eye and microscopically, at least three sections of each being taken. Of these 28 (82 per cent.) were abnormal, but 6 were tuberculous and 3 others were associated with intestinal disease, leaving 19 examples of "idiopathic" appendicitis (56 per cent.) of which 5 had recovered and 14 were still in the stage of convalescence. In his well-documented paper Dr. Heine gives facts and figures which lead him to think that neither climate, race, food, nor intestinal parasites are involved in the ætiology of the disease.

NEW PREPARATIONS.

ALMATA (Messrs. Keen, Robinson and Co.).—The following is the analysis of this preparation which has already been favourably reported upon: egg yolk, supplying protein, fat, and vitamins A, B, D, E; butter, supplying fat and vitamins A and D; maltodextrins, supplying carbohydrates; and decitrated fruit juice, supplying vitamin C. In accordance with this analysis the claim is made that the food approximates to breast milk more closely than any other infant food, while the fat and calcium absorption are high. The mineral content is similar to that of breast milk, and the laxative action is due to the maltodextrins.

(1) CAMPHRO-SALYL AND BENZYL SALICYLATE, (2) FERRUGINOUS AMPOULES.—We have received from the English agents, Messrs. Wilcox, Jozeau and Co., 15, Great Andrew-street, London, samples of these new remedies emanating from the Laboratoires Fraisse, 8 Rue Jasmin, Paris. (1) Camphro-salyl is a compound of benzyl salicylate and camphor. Benzyl salicylate is an exact chemical substance of the nature of a phenol ester and is obtained by the action of salicylic acid on benzyl alcohol. This crystalline powder was found to be analgesic but when combined with camphor its effect was much increased. The compound is put up in ampoules and is sold in boxes of six, each ampoule containing benzyl salicylate 0·50 g., camphor 0·10 g., and olive oil 5 c.cm. It is recommended for its effectiveness in acute or chronic neuritis.

(2) Ferruginous ampoules is a preparation of the cacodylates of iron and strychnine with sodium glycerophosphate, and has been used with success in anæmia following accident or surgical operation, and that accompanying the menopause or uterine fibroids. In this preparation the chemists appear to have triumphed over the difficulty that few salts of iron are assimilable subcutaneously and that treatment by injection is generally very painful.

THE MEDICAL DIRECTORY FOR 1931.

THE eighty-seventh annual issue of the Medical Directory, which reached us in November, contains 55,035 names, being 498 in excess of those in the issue of the previous year. The increase of names is quite unevenly distributed among the seven sections of the directory. In Wales (—19), Scotland (—32), Ireland (—166), and the Services (—5) there has been an actual decrease, the extent of which we give in parentheses, more than counterbalanced by the surplus of 73 names in the London list, 308 in the Provincial list, and 339 among Practitioners Resident Abroad. An analysis of this changing distribution would throw interesting light on the trend of medical practice in our days. Apart from these changes, which increase the total bulk of the book by only 16 pages, the directory is little altered. The passing of the Local Government Act has involved the disappearance of the familiar heading "Metropolitan Asylums Board," and the omission of the words "poor-law" and "infirmary" as applied to general hospitals. Once again we congratulate the publishers on the vigilance and enterprise which has produced something unique among the directories of the world. The addition of an alphabetical index covering the names in all sections of the directory would make it a perfect work of reference. The publishers are Messrs. J. and A. Churchill, and the price is 36*s.* net.

THE MEDICAL REGISTER.

To the Editor of THE LANCET.

SIR,—I desire to remind those who find it essential to know whether a practitioner is *legally* qualified or not, that in order to facilitate their work the Council publishes an office edition of the Medical Register, printed on inexpensive paper, and bound in boards. This edition contains precisely the same names and lists as the official edition. It is issued from this office at a special charge of 10*s.*, post free, but no copies can be issued unless they are ordered and paid for prior to Dec. 31st. I shall be happy to send an order form upon application.

The Medical Register is the official publication, issued under the Medical Acts, and contains the names of all legally qualified practitioners. There is no other publication which takes its place. The Council also issues each month a list of additions to and deletions from the Register. The charge for these will be furnished upon application.

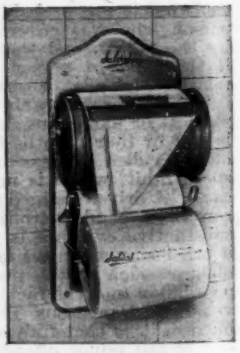
I am, Sir, yours faithfully,

NORMAN C. KING,
Registrar.

General Council of Medical Education and Registration of the United Kingdom, 44, Hallam-street, London, W., Dec. 1st, 1930.

A SANITARY TOILET DEVICE.

THE Salvas Toilet Roll (made by Messrs. Salvas, 65a, Fenchurch-street, London, E.C. 3) consists of two layers of paper. The outer layer, which is thin and shiny, is merely a waterproof protection for the hands, but the inner layer, resembling compressed cotton-wool, is both soft and absorbent, without being fluffy. This inner layer can be moistened, and the paper can thus be used as a clean damp sponge without soiling the fingers. The accompanying illustration shows the Salvas Sanitary Toilet Requisite, which is a convenient apparatus for moistening small sections of the paper as they are wanted. The end of the roll is drawn upwards over a cylinder containing about a pint of water. The top of the cylinder is open, and by means of a small roller, controlled by turning a knob, the paper is lightly damped but not saturated. An antiseptic—e.g., the Salvas disinfectant concentrated pine tablets—can be added to the water.



The toilet is, of course, completed with a small dry piece of the absorbent paper, but there are real and obvious advantages in beginning with a soft and damp application, and Salvas paper is excellent for the purpose. The "toilet requisite" once demonstrated should not prove an impossible obstacle either to the unintelligent or the hasty; it may be had in many different colours and qualities at prices from 7*s.* 6*d.* to 2 guineas. The price of the toilet roll refills is 6*s.* 6*d.* per dozen, and as the paper is thick the length is below the average. But its use as a moist sponge might make it relatively economical.

ADDRESSES AND ORIGINAL ARTICLES

THE DANGER OF SPECIALISATION.*

BY A. E. BARCLAY, M.D. CAMB.,
LECTURER IN MEDICAL RADIOLOGY AND ELECTROLOGY IN THE UNIVERSITY OF CAMBRIDGE.

I BELIEVE the Greek philosophers held that no man of education should specialise—"nothing in excess" is a Greek proverb—it was for the slave to specialise, and for the man of wider knowledge and broader outlook to criticise and appreciate the work in arts and crafts in which his slaves were specialists. The outlook upon specialisation to-day has changed, but the underlying principle is the same—a very broad basis of education is essential for critical appreciation of specialised knowledge.

Specialisation has become essential because the receptivity of the human mind is limited. It is said that the specialist is a man who knows more and more about less and less, while the practitioner is one who knows less and less about more and more. And therein lies the danger. The ordinary man who becomes a specialist is working at some small aspect of a problem, at filing and polishing one cog in a wheel in a chain of wheels in a vast and most complicated machine—is it likely that he can see in its proper proportions the value of the little bit of work that he is doing? And it is this danger that runs through the whole of those branches of science about which I know anything.

In the medical curriculum the student who goes straight through the course spends two years on pre-medical subjects, physics and biology, two years on anatomy and physiology, with dissecting-room and laboratory work, and three years in clinical studies in the hospitals. It is nearer eight than seven years before a student can qualify, and it is not till he has qualified that he is able to take responsibility and see his life-work from an angle that is far different from that of examinations. The medical student of to-day has to start his pre-medical training in the last two years of his school life—when and how can he get the general education on which to base his long years of purely specialist study?

Practically every teacher aspires to be a specialist in one form or another. His research record rather than his teaching ability is the keystone to his appointment. His living interest lies in his special research—his bread and butter is in the heavy burden of routine teaching. When a teacher is placed in charge of a special department it must be his aim and object to further its interests. Naturally he will be proud of the work that is done in his department, and he will not underestimate its importance. He will attend meetings and congresses where he will talk his own particular "shop"; and there will meet others who, like himself, have long come to the conclusion that this particular branch is the one that really matters in the curriculum. This, stated with some exaggeration, no doubt, is the natural attitude that has come out of the multiplication of specialties, each in its own department, each in its isolated building if it can get one, each with its own journals, and often with its own jargon. And if this man has to outline a section of a course for students, whether of medicine or anything else, he is not likely to minimise the importance of the knowledge that his department can teach, or to give way to other subjects which are of secondary importance in his eyes.

Little wonder that the medical curriculum has grown unwieldy, that the course cannot be completed in less than seven to eight years after matriculation, and that a further year is threatened. And withal it is sometimes forgotten that to the medical student the most essential of all studies is the study of man. He can be taught a great deal, but this one thing he has to learn for himself. No teaching, except that of Mother Wit, can give him the wisdom that leads to an understanding of human nature—call it psychology if you will, so long as you do not think of it in terms of time reflexes and other laboratory methods. The student has little chance of developing this essential part of his training, except by contact with his fellows, until he gets into the wards. Yet this is his life's work.

The Fallacies of Anatomy and Physiology as now Taught.

Most students notice that there is a very wide gap between the subjects of the second M.B., the anatomy and physiology, and the practical medicine of the final years. In teaching the anatomical and physiological sides of radiology, I meet men who have been qualified for a few years, and nearly all of them seem to have forgotten these subjects to an astonishing extent, yet, so far as I can tell, they do not seem to be any worse or better physicians on that account. Surely there is something far wrong that this should be the case! I believe the trouble lies in the fact that these have become specialist subjects, taught by specialists, in departments that are separated from those in which the practice of medicine goes on.

This was brought home to me by a new text-book published just a year ago that came into my hands recently. One knew vaguely of the wonderful progress in physiology, out of which have come some of the greatest advances in medicine—insulin, liver extract, hormones, and vitamins. I turned the pages of this book to see how radiology had affected the teaching of what I had learned of the physiology of the alimentary tract. Looking to the name index in this attractive volume, I found a list of 360, whose work is acknowledged, but not a single one who has studied the human alimentary tract by radiological methods. In vain one sought for such names as Rieder, Holzknecht, Hurst, Forssell, Haudek, Case, Carman, Haenisch, Kaestle, Groedel, Akerlund, Alvarez, Berg, Scott, Holland, and all those others we know so well in radiology. And when one examined this book, one was staggered to find in this section the same physiology that we were taught 30 years ago or more. The whole subject that the radiologist knows so well is a blank! The experiments of Beaumont 1833, "The Backwoods Physiologist," on Alexis St. Martin—he of the gunshot gastrostomy—still hold the field! The stomach is still described as normally a bilocular organ during the process of digestion, and Beaumont's actual descriptions are reproduced! The mechanics of digestion, the importance of which probably only a few radiologists yet fully realise, receive scant attention.

* Extracts from the Silvanus Thompson Lecture delivered before the British Institute of Radiology incorporated with the Rontgen Society on Dec. 5th, 1930. The lecture will appear in full in the British Journal of Radiology.

Peristalsis is noted only in a few passing words; the extraordinary and extremely important "mass movement" of the large intestine, first described 19 years ago, is not even mentioned. In fact, the intestinal tract is just the same inert chemical test-tube that it was 30 years ago, in which everything takes place according to formulæ. After many years' observation of human stomachs of all types, one has no patience with such armchair pictures based on the study of one abnormal subject. The futility of such conceptions has been obvious for the last 20 years or more to any person who took the trouble to watch the opaque meal examinations that are conducted by thousands every day in our hospitals.

More than 30 years ago W. B. Cannon, then a young physiologist, investigated the intestinal tract of animals with bismuth and paved the way for human investigation. He even applied the method to man, but very soon returned to the physiology department and to animal experiments. So far as I know, no other physiologist pursued the subject, and it was left to radiologists, men who had no special knowledge or training, and who were overburdened with routine work, to hammer out for themselves as best they could the normal and abnormal mechanism of the human alimentary tract. Apparently, there are still physiologists who do not know of the pre-war work that has been done. In all good faith they go on teaching bilocular stomachs, acid control of the pylorus, and other relics of a bygone day when speculation passed for knowledge. Our medical students have the right to be taught such known things as will prepare them for the practice of medicine. Conversely, they surely have the right to be delivered from the necessity of being taught things which are obviously wrong, or which are merely pious armchair hypotheses.

To-day radiologists rely implicitly on disorders or irregularities of the mechanics of the intestinal tract to guide them to a diagnosis with a degree of accuracy that is extraordinary, especially considering that they are dealing only with shadows. Lord Moynihan recently said that the X ray examination of the stomach is of more value than all other methods put together.

I am not suggesting that there are no fallacies in the opaque meal method of investigation, but what I do maintain, as the result of very many thousands of examinations, is the futility and certain inaccuracy of observations based on a limited number of individuals. For this reason it is perhaps providential that no serious attempt has been made to do radiological work in the laboratories, but it makes one more than sceptical of the chemical work on the alimentary secretions that emanate from such laboratories. This must also be open to the same fallacies—not one, or ten, or a hundred observations can justify definite conclusions about either the chemistry or the physics concerned. If gross variations of form and function are possible within the limits of normality, how can we dare to pretend scientific accuracy from animal or test-tube experiments of such variables as human gastric and intestinal secretions, that we know are subject not only to mental and physical fatigue, but to every emotion—as was shown 100 years ago by Beaumont—and to every sensation that finds expression in the human body?

The book I have referred to was written for medical students, and, as I have said, it contains sections that are not only futile but utterly misleading in an extremely important department of physiology. Is this book typical? Perhaps not, but that such an important section could appear and pass without comment in the glowing reviews of two editions that I have seen shows that the vitally important physiology that has been revealed in X ray departments has not even yet been noted by some physiologists.

No branch of science can afford to stagnate—it must progress to justify its existence, and in such subjects as anatomy and zoology the only way of progress used to be in the further development of the descriptive methods that have been handed down for generations. This extended to comparative studies and other fascinating branches, but of the descriptive type and all dealing with form, and that form being the dead subject that, as regards the internal organs, is as different from the living as death from life. The living conception of human anatomy and physiology that is opened up by radiology presents a new outlook on such subjects. Roughly, anatomy deals with form, while physiology is confined to function. To the radiologist and to all who study the living subject, this or any other artificial division is altogether impossible. The radiologist cannot study form without considering function, nor can he consider function without taking form into consideration. From the radiological point of view, anatomy and physiology cannot be divorced from each other or from pathology; the one slides imperceptibly into the other, and there is a wide border-line that is common to each. To divide in order to classify may be convenient, but it is wrong, unnatural, and leads, in practice, to a mistaken conception. May I take a simple example from the appearance and behaviour of the stomach? In our anatomical conception, we describe the organ in one state as J-shaped, and at the same time we note that the tonic action—function or physiology—of its muscle is good. Perhaps the patient turns faint or is startled, and the whole description goes wrong—the stomach changes its shape and sags down because the tone (physiology) of the muscle has altered. The form and the function of this and other muscular structures are interdependent. Radiologically, at any rate, there is no dividing line in this section between anatomy and physiology. There is also a point where physiology and pathology melt imperceptibly into each other, and the further we trace things back towards the elements, the more impossible it becomes to draw a dividing line and say where the normal cell changes its character and becomes pathological. So far as radiology is concerned, these three essentials of all medical training, anatomy, physiology, and pathology, are so bound up with each other, and so intimately concerned with the diagnostic side of radiology that it is little short of folly to attempt to separate them, and regard them as separate subjects.

In other biological sciences, some of which enter the early stages of the medical course, radiology offers the same vistas of progress. In zoology, for instance, a fertile study would be a comparison of the mechanism of digestion through the animal kingdom, leading up to man.

The Radiologist in the University.

The four great biological subjects—zoology, anatomy, physiology, and pathology—are housed in separate departments, each with its own head, each ploughing its own furrow. Are those furrows converging on one object—the preparation of the medical student for his life's work?

Radiology must come into all the biological sciences, whether human or animal. Here and there we find an X ray apparatus in an anatomy or physiology department, for the most part unused for lack

of a competent radiologist. There are exceptions, but, speaking in general, radiology is not yet employed in the biological sciences where it could bring the same tremendous incentive for progress that it has already supplied to clinical medicine. The need for university departments of radiology is evident. If attached to any one of the existing sections—e.g., anatomy or physiology—they are not likely to fulfil their destiny, unless the director of the section has a breadth of view that takes his subject roaming into preserves that, by tradition, belong to other departments. To the radiologist there is no artificial barrier between sections. Just as in a hospital, the department of radiology should be a meeting house where different interests converge, draw from each other's store of knowledge to mutual advantage. In a sense it should not be self-contained, but rather a service department that is provided to meet the need of each research as it presents itself. Here the accumulated store of combined experience is at the service of all. But it must be something far more than an X ray apparatus and equipment which can be bought for a few hundred pounds. The services and coöperation of an *experienced* radiologist (by that I mean a man who has himself examined thousands of patients and not just a scientist who has taken a medical qualification) should be at the disposal of all biological departments of every university, so that living human and animal problems could be worked out, apart from the rush and distraction of the hospital X ray services.

Scientific and especially medical education has, like Topsy, "just growed." Even if we see possibilities of improvement, we are hampered not only by the conservatism of tradition, but by the personnel, buildings, and machinery that have grown up in the course of centuries. A place, however, must be found for radiology, for our students must be taught something of the subject. The question is how much and by whom is it to be taught? Some maintain that all medical students should take a course of lectures, and also a period of actual service in an X ray department, while some surgeons and physicians hold that all the radiology the student needs should be taught by them. To me it is clear that every student should in the first place be taught the radiological aspects of anatomy and physiology in these departments. He must also learn the uses of radiations in diagnosis and treatment, and what he can expect in the way of assistance if he calls in a specialist. This knowledge should be imparted by the radiologist himself in a short course of, say, eight lectures, but there is no need whatever to teach students anything of the very highly specialised technique. In many universities such a course is already in the syllabus. It is yet one more set of lectures added to the curriculum! And every special service argues the same way, wanting some of the student's time. In each instance the same principle might be applied as in radiology—all technique might with advantage be eliminated except for those who intend to specialise. Why should the student learn masses of detail, which seem to have no practical application, not only in physiology and anatomy but in every subject? Why should we tempt providence by making all learn the technique of surgical operations which only a few will ever have the skill or experience to perform efficiently, the detail of chemical, bacteriological, and other technique, only a fraction of which they can possibly use? Each specialist is trying to teach as much as possible of his own subject to men who, in nine cases out of ten, will neither have the opportunity nor the wish to practise that particular specialty. For that one man in ten the teaching is too little to be of real value; for the other nine, it is just so much detail to cram up for examinations. I believe that the medical student could be adequately prepared for his life's work in a far shorter period. It is, however, only by coöperation, placing the common good before departmental interest, that the student's burden can be reduced without impairing efficiency. Each branch needs to know more and to see more of the work of the other branches, so that they can coöperate effectively in the team. The danger of specialisation is, of course, well recognised, and steps are taken to combat it in various ways. Team-work, however, seems to be the only practical solution.

The Specialist Practice of Radiology.

Now let us look at the other side of the picture. How is the specialist practice of radiology shaping its course? Is it, like so many other branches, endeavouring to build walls around itself, or is it widening out its sphere of influence and usefulness? We have our own journal; that is inevitable, for many of our contributions lie on the borderland—they are often too physical for publication in the medical, and far too medical for the physical journals. Our journal is essential, fills a unique place, and must always be an integral part of radiology. But radiology has become ubiquitous, extending into every branch of medicine. We can hardly take up a journal that does not contain some radiology. Whether we like it or not, radiology, even specialist radiology, has become diffused—the radiologist, loyally backed by the physicist and manufacturer, has laboured to develop his special methods, and one after another they are being absorbed into the grasping folds of other special branches of medicine. These, having learned from the radiologist the technique and value of the methods he employs, quite naturally and without the slightest shame take them for their own use. I fear it is no use acting the part of the small boy whose toy is taken from him by a bigger boy—"that is my toy," says he; "that *was* your toy," says the big boy and just walks away with it. One by one we are seeing our toys taken—dental, orthopædic, fracture, dermatological, urological, tuberculosis work, gastric work, radium—and the radiologist is left in different centres with just those branches of his art that have not been claimed by the stronger boys, who quite often make but a sorry show of this acquisition. Some of this loss is inevitable, and we might as well face it, but a large part of it could be avoided. If the radiologist is really competent and delivers the goods, the highest class of goods at a fee that is reasonable, he will almost invariably retain the practice in which, if he is expert, he will easily beat his untrained competitors—but he must be a real expert. There is room for the first-rate clinical radiologist anywhere; the second-rater—in radiology as in all else—is liable to go to the wall.

It is evident, however, that even if he would the radiologist cannot erect a wall around his preserve, and, in fact, the only fence, or self-defence, he can put up is his mastery of his own sphere of medicine, a sphere that is, I venture to say, wider than any other in the whole range of medical practice. Specialisation has been let loose and has abundantly justified itself. What attitude do we, as radiologists, take in the matter? The answer as regards diagnostic radiology is simple—although we happen to work in a laboratory we are essentially clinicians, and we must be a clinical service department, self-centred and self-contained only because our methods are so highly specialised

that centralisation of our service is the only way to progress and efficiency.

Radiology covers such a wide field and one that is still extending so rapidly that it is now impossible for any radiologist to be anything other than a general practitioner in the subject and to specialise in certain branches. Radiotherapy alone, for instance, has become a subject of such proportions and depending on such a variety of laboratory research that, unless he specialises in therapy, the radiologist cannot keep up with progress in this one important branch. Therapy, therefore, cannot but be a special service department drawing its cases from every other department, the responsibility for the special treatment being that of the radiotherapeutist.

The radiologist does not aspire to be a physician, a surgeon, a gynæcologist, a physiologist, an anatomist, or to be an expert in any of the branches he touches. His unique position as the first medical man to observe X ray appearances has forced him, however, into pioneer work in many fields in which he has had to find his own way. History repeats itself, and we think of the pioneer enthusiasm of our forefathers for leeches and bleeding; of another generation for indiscriminate gastro-enterostomies, wholesale dental extractions, tonsil and adenoid operations, and in the present generation, ultra-violet rays, vitamins, and, may I add, the surgeon's discovery of radium, &c. In our own particular sphere it was the radiologist's misfortune, not his fault, that he had to plunge straight into pathological studies in hospital practice before the normal had been investigated. This has had serious consequences, and each of us can think of mistakes that were due to want of knowledge of the normal and want of correlation with the clinical. The worst and most extensive blunder of this kind and one that had and still has very serious consequences was the misinterpretation of the shadows at the root of the lung. For a period normal shadows were interpreted by some observers as definite evidence of hilum phthisis. Subsequent history has proved the diagnosis to have been wrong in the vast majority of cases, but on the strength of this X ray diagnosis men were exempted from army service by the hundred, and others were sent to an invalid life and placed under the heavy disability of being tubercle suspects. The clinical diagnosis of the condition by the physician was on too weak a foundation to refute the radiological findings and, naturally, there were no post-mortems. It took years of scepticism followed by ridicule before we realised that this "X ray disease" was nothing more than a very serious error of judgment on the part of those who studied the chest by X rays without adequate experience of the normal. Yet the blame should hardly rest with the radiologist, for he had no foundations in either anatomy or physiology that had been corrected to X ray or living standards.

The same thing applies to the alimentary tract—the study of pathology has preceded the study of the normal. Many an abdomen has been opened because of a reported kink, a dropped stomach, or dropped flexures of the colon, which were, for the most part at any rate, mere variations of the normal. We still see reports on constipation in which the radiologist talks of a dropped transverse colon as the cause of the trouble. When he has seen the stomach and the colon functioning normally in spite of the most weird anatomical dispositions, he will cease to jump to the conclusion that these things are the most probable, but rather the least likely cause of the symptoms.

It was years before even the radiologist really appreciated the fact that the stomach and all the alimentary tract was a living muscle, capable of extraordinary variations within the normal, and, naturally, he attributed to some of these variations the liability for symptoms from which the patient suffered—he was just finding his way, blazing a trail in new country where there were no signposts to guide him.

Those were great days of adventure for the radiologist as he explored unaided into the unknown that was revealed by X ray methods. The present position of radiodiagnosis of chest and alimentary conditions is something of which he may be justly proud. There is still a long way to go. But that is no reason why what has been done and really proven should not be accepted by other departments. Radiologists have established certain facts by the study of an enormous bulk of human material to which no other department has had access. Only by such concentrated study is it possible to build up a true conception of the living anatomy and physiology.

VALVULAR DEFECT IN RELATION TO VARICOSIS.

AN INVESTIGATION OF THE VALVULAR MECHANISM OF THE VENOUS RETURN FROM THE LOWER LIMBS.

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VARICOSE veins are generally admitted to be of congenital origin, although authorities differ as to whether the inherent factor is weakness of the vessel walls or defect in the valves. The observations that have been made to support the former theory depend mainly on histological changes which are difficult to interpret and on inconclusive experiments. The latter theory offers a more promising field for direct observation, and the experiments recorded below have been made to determine the presence or absence of valves in a series of young subjects assumed to include normal as well as varicose types.

Anatomy of the Veins.

Before considering these experiments a brief review of the accepted anatomy of the veins of the lower limb is essential. This is best considered under the following headings: (1) superficial system; (2) deep system; (3) perforating system. The superficial and deep systems need little further description beyond that given in text-books, but the anatomy of the perforating channels which connect the superficial and deep veins must be further detailed.

Perforating veins.—The main venous trunks of the limb form part of the deep system, and the superficial veins drain into them through the perforating channels. The perforating system, therefore, is of supreme importance to the superficial veins, and yet it is the part of the venous path which has received the least attention, especially of recent years. Certain of the perforating veins have acquired increased importance during evolution in proportion to the size of the superficial channels related to them. Thus the preservation of the terminations of the main internal and external saphenous veins is of some advantage to the return circulation, provided that they are adequately valved. If they are not, they may be ligated with advantage, as the remaining perforating veins serve to carry on the needs of the superficial

circulation. Briquet, more than a century ago, drew attention to the relation of the superficial varices in the leg to perforating veins.

"À l'endroit où la phlébectasie est la plus prononcée, il y a des communications très-larges avec les veines profondes, que sont larges à l'endroit d'où part la branche anastomotique; mais qu'ils reprennent leur calibre."

The perforating veins which have attracted most atention are the main ones of the *internal saphenous* in the leg and thigh (Fig. 1). These are direct and are found: (1) At the junction of the middle and superior thirds of the leg. Here a large important channel connects the internal saphenous system—usually the trunk—with the posterior tibial veins, running close to the tibia through the muscular attachment. (2) At the junction of the middle and distal thirds of the leg. This is usually smaller. It connects the internal saphenous and the posterior tibial. (3) Above the knee there is usually one anastomosing vein between the internal saphenous and the deep vein. This is small and is usually placed in the middle of the thigh.

The perforating veins of the *external saphenous* (Fig. 2) are indirect in the calf, as in this situation they unite with the trunks of the chief muscular veins (1) About the level of the junction of the upper and middle thirds of the leg a branch runs from the external saphenous vein through the deep fascia to end, as a rule, in the medial gastrocnemial vein. (2) A superficial loop of secondary size runs from the external saphenous vein over the lateral gastrocnemial belly to take part in the formation of the superficial external femoral vein. From this loop or from the main vein one or more perforating vessels run to the external gastrocnemial vein. (3) About the middle of the leg an indirect perforating vein from the trunk of the external saphenous traverses the soleus to join the soleal vein before terminating in the posterior tibial vein.

In the lower third of the leg one or more direct perforating twigs pass from the external saphenous, piercing the deep fascia to end in the posterior tibial vein.

COMPARISON OF VENOUS RETURN IN ARM AND LEG.

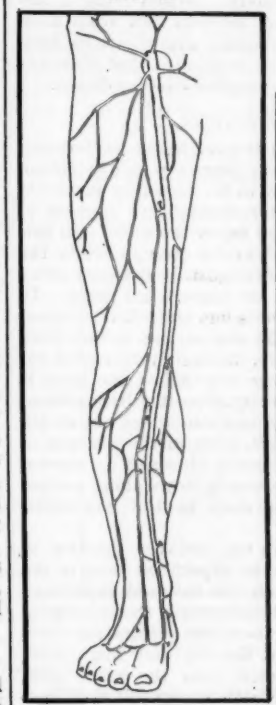
Briquet held that during contraction of muscles all the blood in the lower limb passes through the superficial veins.

"Toute passe dans les veines superficielles, ce qui démontre par l'influence des contractions musculaires sur le jet du sang, que dans la saignée on voit s'enlancer fort loin chez les gens robustes au moment où se fait la contraction."

This still appears to be a general impression, which is strengthened by analogy with the venous return in the upper limbs. It is common knowledge that in the arm increased flow along certain superficial veins is produced by contraction of the forearm muscles, use being made of alternating movements of clenching and unclenching the hand in collecting blood for transfusion from a donor. The superficial median and the deep median join and bifurcate immediately to form the cephalic and the median basilic veins. Blood is drawn usually from the median basilic. The advantage of the alternate clenching and relaxation is that the contraction of the muscles of the forearm tends to empty the deep veins, some of the blood reaching the superficial veins through the deep median. The needle or cannula should therefore be distally directed and is inserted downwards from a point sufficiently high up the median basilic to ensure that it does not obstruct, kink, or project distally to the deep median. Otherwise this vein does not convey its portion to the superficial veins, so that the value of the pumping action of the muscles is diminished. It might theoretically be possible that the same increase of flow of blood into the superficial veins of the leg occurs during the period of contraction of the calf muscles, the forces of pumping and suction from muscular contraction and relaxation playing an organised though complicated part in the blood return through alternate superficial and deep routes.

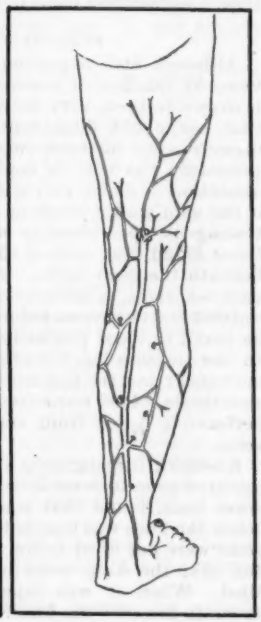
Comparison of the veins of the arm and leg reveals the following points of difference. In the arm venæ comites accompany each artery to the root of the limb, where a single efferent channel is formed in the axilla. The axillary vein drains the blood directly not only from the entire superficial surface of the arm but also from the shoulder girdle. In the lower limb a single main efferent channel (the popliteal vein) is formed at the knee. Blood from the superficial lateral aspect below this level reaches the efferent trunk here, while the internal superficial areas are drained into the vein at the root of the limb, together with the blood from the superficial veins of the thigh above the knee. Moreover, the greater part of the blood from the pelvic girdle and from the thigh returns via a different channel, the internal iliac. Blood in the median basilic is at so short a distance below the level of the heart that the aspiration of the chest during inspiration and the force of vis-a-tergo will together be more than adequate to account for the return. In the lower limb, where varicose veins occur, the difference of level is considerable and the mechanics of the venous return call for careful consideration. With such noteworthy differences it is possible, therefore, that the perforating veins have a different action in the upper and lower

FIG. 1.



The internal saphenous system. The majority of the perforating veins arise from the main trunk, but some from secondary branches.

FIG. 2.



The external saphenous system. General outline of the communications and perforating veins.

limbs. Indeed, Verneuil definitely stated as a result of anatomical observations that in the leg the perforating veins were normally valved to prevent flow from deep to superficial veins, but that in the upper limb flow from deep to superficial veins was normal. The majority of subsequent writers agree that whenever valves are found in the perforating veins of the leg they are arranged to prevent flow from deep to superficial veins (de l'Aulnoit, Le Dentu, Luschka) and my own observations are in accordance with this. Some investigators, however, have failed to confirm this finding. Klotz said that the majority of perforating veins were unvalved. When valves are present, in some cases they prevent flow from deep to superficial and in others from superficial to deep veins. It must therefore be concluded that observations by dissection leave the matter in some doubt.

PERFORATING VEINS.

Although little attention is paid to the perforating veins by teachers of anatomy, the surgeon's attention is drawn to them very early in his career by incidents that occur not infrequently during the process of dissecting out tortuous veins below the knee. In this procedure the vein is kept under tension while the dissection is made, and is occasionally dragged away if the vein wall is weak or the tension too great. In tracing the open bleeding ends left behind, it is sometimes found that most of the hæmorrhage comes from beneath the deep fascia. If, during an operation for varicose veins, a perforating vein below the knee is isolated and cut across before ligation, it will sometimes be found to bleed profusely and sometimes not at all. In the varicose leg, therefore, even in the absence of movement and the full relaxation obtained by general anæsthesia, blood not infrequently flows along certain perforating veins from the deep to the superficial veins.

Kosinski, investigating in the cadaver the flow of coloured mass injected into the superficial veins of the lower limb, found that when the internal saphenous below the knee was injected downwards the superficial veins were not filled below the main perforating vein, but that the deep veins of the leg and thigh were filled. When it was injected into the same vein upwards towards the knee, both superficial and deep veins were filled. The saphenous, therefore, not only empties itself through the main termination, but also through the perforating veins. This is true both in the normal and in the varicose limb. If a distended segment of a varicose or normal vein in the calf is isolated between two rubber bands and the patient asked to walk up and down the room, the full superficial vein segment is often emptied. The suction of muscle relaxation is the force presumably responsible for the emptying. It has recently been shown by Gaugier that if an opaque solution, such as lipiodol, is injected into a varicose vein, this substance can be seen under X rays to have reached the deep veins after a few movements of the calf, and using the same method McPheeters has made extended observations on venous flow.

It may, then, be regarded as established that under conditions of movement blood flows from the superficial to the deep veins in varicose and non-varicose veins, and that in varicose veins, therefore, flow may take place in either direction according to circumstances.

DISPOSITION OF VALVES IN PERFORATING SYSTEM OF LEG.

It still remains to be settled whether flow from deep to superficial veins ever occurs in the normal leg under suitable conditions of rest or movement. Direct observation under local anæsthesia seemed to offer a ready method of definitely settling the question. As, however, no opportunity presented itself of making this apparently crucial experiment on the living subject, preliminary observations were made by an indirect method in the post-mortem room.

Method of Investigation.

A series of experiments was carried out on the bodies of young subjects below the varicose age and of young adults without obvious varicose veins. After preliminary observation on the limitation of flow of coloured fluid injected intravenously at various sites opaque fluid was substituted and skiagrams were taken at various stages. These experiments eventually proved that a single, apparently conclusive, direct experiment in a supposedly normal subject might have given misleading information, and incidentally afforded an explanation of the divergence of opinions among anatomists.

The first experiment gave support to the possibility of flow from deep to superficial veins. In the body of a young unmarried woman, free from superficial varicosity, the posterior tibial, anterior tibial and the external and internal saphenous veins were dissected out at the level of the ankle joint, and a cannula inserted in each. The femoral vein above the termination of the saphenous was dissected out and opened. The deep and superficial veins were then syringed with water through the cannulas in all the opened veins at the level of the ankle until the flow from the femoral vein was clear. By this means any clots which might prevent the valves from functioning were removed. The internal saphenous at the knee and the superficial veins along the line that represents the surface marking of the anterior tibial veins were now exposed and opened. Coloured fluid of approximately the same consistency as blood was then syringed into the posterior tibial at a low pressure. This flowed not only out of the femoral vein, but also out of the internal saphenous and even from the small perforating veins between the anterior tibial and the superficial veins on the front of the leg. The same result was obtained when the anterior tibial was injected.

The results of this experiment suggested that all the veins of the leg were in free communication, like the channels of a plexus, and that the blood could pass freely backwards and forwards along perforating and deep communicating veins according to the dictates of muscular contraction or other forces. On consideration this seemed to indicate that either a very crude method of maintaining an orderly circulation was present, or else a very elaborate one the mechanism of which was not obvious. Repetition of the same experiment in a number of apparently normal young subjects showed that this free communication from deep to superficial veins was present in only a small proportion of cases, and the consideration of obscure mechanisms was therefore unnecessary.

Further investigations have shown that in the majority of subjects—a group considered to represent the normal type—the veins are valved in such a manner as to ensure absolute efficiency of the venous return from the lower limb. In the remainder incompetence of valves in definite regions gives rise to definite types of varicosity.

Twenty-eight more cases of young subjects without any clinical sign of varicose veins were investigated in this way. In 25 of these, coloured fluid injected into the anterior and posterior tibial veins did not reach the superficial veins even when the pressure of the injection was raised considerably after ligation of the femoral below the point of entry of the saphenous vein. (See normal or congenitally non-varicose type, Figs. 4 and 5.)

VALVULAR DEFICIENCY IN PERFORATING SYSTEM.

1. Three cases out of 28 were distinguished from the rest by the incompetence of the perforating system in connexion with the internal saphenous

system. They will be referred to as the *congenitally varicose internal saphenous type* (Fig. 6). These three cases were investigated by substitution of an opaque for the coloured fluid, the injection being watched under the screen and the results recorded by films from time to time. In this type there is leakage from the deep main veins along certain perforating veins of the internal saphenous, but all other branches of the deep veins are adequately valved at their terminations.

2. Of the remaining 25 cases ten were investigated by X rays in the same way. In eight of these fluid injected remained confined to the main venous channels, and there was no escape into any tributary, no matter how high the pressure of the injection was raised after ligation of the femoral vein. (See Figs. 4 and 5). In two cases out of the ten, reflux occurred into muscular branches of the calf (Figs. 7 and 8). The trunks of these muscular veins, as has been noted above, receive the perforating veins of the external saphenous system. There is still some protection of this superficial system from reflux from deep veins, as in one of the cases the injection fluid did not reach the system whatever pressure was reached in the main veins, and in the other case the fluid slowly entered it when the pressure was raised to a very high level. The external saphenous has, however, only a small proportion of its normal protection, and the group in which there is muscular vein incompetence may also be regarded as one disposed to varicosity of the external saphenous system. It will be referred to as the *congenitally varicose external saphenous, or calf-muscle type* (Fig. 7).

After eliminating these two groups the majority of the remainder will represent the normal non-varicose type.

DISPOSITION OF VALVES IN SUPERFICIAL AND DEEP VEINS.

Before defining the normal non-varicose type it is necessary to note how the main superficial and deep veins are generally valved, and to see if any departure from normal likely to give rise to disability can be readily demonstrated.

The following observations by various writers will serve to summarise our knowledge of the disposition of valves in these veins.

Superficial system.—Valves in the great saphenous vein were described in his work, "De venarum ostiolis," by Fabricius, who noted, among other laws governing the disposition of parietal valves, that they are found almost constantly below the entrance of a tributary. According to Bardeleben the principle on which the distribution of valves in superficial veins depends is as follows. Fundamentally a vein consists of a number of divisions segmentally arranged, each division being formed by a piece of cylindrical wall, a conical widening (sinus), a tributary vein entry, and a bicuspid valve. The general rule according to this author is that "distal from every tributary lies a valve, proximal from every valve is a tributary entry." Exceptions are only apparent, and due to disappearance of valve or tributary. Kosinski has shown that the superficial vein is valved below its junction with important perforating veins. Klotz found no valves in cross-anastomoses between veins of equal size; between veins of unequal size there are valves so directed that the blood flows from smaller into larger.

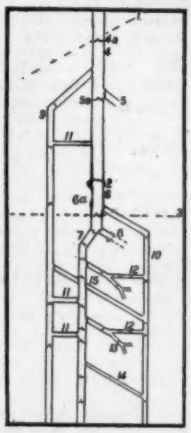
Deep system.—Sappey ("Traité d'Anatomie," 1850–64) stated :—

"Les valvules sont plus nombreuses dans les parties du système veineux où le sang coule contrairement aux lois de la pesanteur, plus dans les membres inférieures que dans les supérieures, plus dans les veines de petit calibre que dans les veines volumineuses, plus enfin dans les veines des muscles que dans celles de tout autre organe. Les veinules intra-musculaires en sont en quelque sorte criblées."

"Les valvules seraient plus abondamment répandues dans les veines superficielles que dans les profondes, suivant Béclard et Meckel. Blandin a refuté cette erreur en montrant que les veines intermusculaires dont les parois sont plus minces et plus souvent déprimées par le jeu des muscles, possèdent, ainsi que la physiologie, pouvait le faire prévoir, plus de valvules que les veines sous-cutanées."

H. de l'Aulnoit pointed out that a valve dominates the venous system of the lower limb (femoral valve), and said that this is the most constant of all. This valve is not, however, so constant as the one below the termination of the deep femoral vein. He showed that the deep veins possess more valves than the superficial and that the muscular veins surpass the two. There are less valves in the deep trunks of the thigh than in the main venæ comites in the leg. In the femoral

FIG. 3.



Scheme of normal valvular mechanism of the lower limb. 1. Poupart's ligament. 2. Adductor ring. 3. Level of knee-joint. 4. Femoral vein. 4a. Femoral valve. 5. Deep femoral vein. 5a. Deep femoral valve. 6. Popliteal vein. 6a. Popliteal valve. 7. Posterior tibial vein. 8. Anterior tibial vein. 9. Internal saphenous vein. 10. External saphenous vein. 11. Perforating veins—internal saphenous. 12. Indirect perforating veins — external saphenous. 13. Muscular veins. 14. Direct perforating veins — external saphenous. 15. Superficial cross-communication.

he found three valves, in the popliteal one, but as many as 19 in the posterior tibial, and 11 in the anterior tibial veins.

The following investigations bearing on valvular distribution were made in a number of cases. The results recorded indicate the normal arrangement of valves in the superficial and deep veins (Fig. 3). The experiments described have, however, been selected mainly because they are simple of application as post-mortem room tests of incompetence of superficial and deep veins.

INTERNAL SAPHENOUS SYSTEM.

EXPT. 1.—Injection of the internal saphenous downwards from a point immediately below its termination forces the first parietal valve when the pressure is raised considerably. The next valve or two give way more readily, and then the fluid slowly begins to enter the perforating vein of the thigh and to fill the deep veins to the same extent as in Expt. 8. It does not descend the internal saphenous until the parietal valve immediately below the point of origin of this perforating vein is ruptured by the raised pressure. Conclusion: The parietal valves in the internal saphenous are usually weak, but occasionally the penultimate valve is comparatively strong. The dilatation of the terminal segment of the internal saphenous vein is probably caused by the pressure of the reflux through the saphenous termination above this comparatively strong valve. There is a valve just below the perforating branch in the thigh. This perforating branch is usually small and somewhat elongated.

EXPT. 2.—Fluid injected into the internal saphenous downwards from a point below the knee fills the saphenous vein as far as the perforating channel at the junction of the upper and middle thirds of the leg, through which it reaches the deep veins. It does not descend the internal saphenous beyond this point, but it occasionally reaches the external

saphenous system via small communicating branches. The course in the deep veins is almost entirely upwards, that in a downward direction being usually very limited by valves. Conclusion: There is a valve in the internal saphenous just below the perforating vein in the calf. Blood may sometimes flow from the internal saphenous to the external saphenous along superficial communicating branches.

EXPT. 3.—Fluid injected upwards into the internal saphenous at a point below the level of this perforating vein fills the internal saphenous and may occasionally reach the external saphenous by some small superficial cross-connexions; also, through the perforating vein, it enters the deep veins, which it fills to the same level as in 2. Conclusion: Blood in the internal saphenous may flow along the main channel to the termination, through the perforating veins into the deep system, or may occasionally reach the external saphenous. Blood reaching the deep veins is directed up the limbs and cannot pass downward.

The conclusions from 2 and 3 agree with the results given by Kosinski, but the limited extent of the flow down the leg along the deep veins in the normal must be emphasised.

EXTERNAL SAPHENOUS SYSTEM.

EXPT. 4.—Fluid injected upwards into the main external saphenous vein runs along the main channel to its termination in the popliteal vein, enters the perforating veins of this system, and also travels along the veins connecting it with the internal saphenous system. This spread is so very diverse that its demonstration by X ray is impossible.

EXPT. 5.—Fluid injected into the external saphenous downwards from a point short of its termination is soon obstructed by valves that resist more pressure than those of the internal saphenous.

MAIN DEEP VEINS.

EXPT. 6.—Fluid injected into the external iliac vein is most often held up by the femoral valve, which is placed in a well-protected position about the level of Poupart's ligament. This is often the first competent valve between the heart and the limb veins. The external iliac is frequently provided with one valve, and the common iliac occasionally has one, but in a large proportion of the cases in which these valves exist they are incompetent. Most observers deny the existence of a parietal valve between the heart and the common iliac veins. The femoral valve is very constant in position, but is absent in a small percentage of subjects. Conclusion: The femoral valve protects the limb against back-pressure from the abdomen.

EXPT. 7.—Fluid injected into the femoral vein downwards from just below Poupart's ligament will not pass into the internal saphenous, but continues down the femoral to a valve just below the level of the entrance of the deep femoral vein. It will not enter this. Conclusion: Terminal valves guard the entrances of the internal saphenous and of the deep femoral into the femoral vein. A parietal valve (deep femoral valve) is present in the femoral vein just below the entrance of the deep femoral. This is a very constant valve.

EXPT. 8.—Fluid injected into the femoral below the level of the entrance of the deep femoral most often reaches a point opposite the level of the knee-joint. This point is just distal to the entrance of the external saphenous, but fluid does not enter this vein, nor does it reach the internal saphenous system via the perforating vein in the thigh. Occasionally the fluid is stopped by a second valve near the junction of the femoral and the popliteal veins. Conclusion: A terminal valve is present at the mouth of the external saphenous and of the perforating vein in the thigh. A parietal valve (popliteal valve) is present in the popliteal vein immediately distal to the termination of the external saphenous.

EXPT. 9.—Fluid injected into the popliteal vein downwards from below the level of the knee will not enter the anterior and posterior tibial veins. Conclusion: The beginning of the popliteal vein is valved.

EXPT. 10.—Fluid injected from the superficial aspect directly into the perforating branch at the junction of the middle and upper thirds of the leg reaches the deep veins, where its flow is almost entirely upward, that in a downward direction being normally very limited. Occasionally there is at about this level a communicating branch between the anterior and posterior venæ comites, in which case both main channels are filled above but the flow in a downward direction is prevented. Conclusion: There are valves in the deep veins just below the level of the deep connecting vein. There is usually a valve in the deep vein just below the point of entrance of the perforating vein.

EXPT. 11.—Fluid injected into the direct perforating veins lower down the leg gives similar information.

N.B.—All the valves in the deep veins, including those of the terminations of perforating and muscular veins, withstand high degrees of pressure.

VALVULAR DEFICIENCY IN SUPERFICIAL SYSTEM.

Apart from the disability arising from incompetence of the terminal valves and those of the perforating veins, no striking departure from the normal arrangement of valves has been noted in the superficial system sufficient to justify a subdivision of "superficial varicose type."

VALVULAR DEFICIENCY IN DEEP SYSTEM.

Tests for efficiency of valves in deep veins were carried out in six cases, including the two of the varicose external saphenous type. In one of the six which was otherwise normal, the femoral valve was missing on one side. All the rest showed normal valving in this situation and elsewhere, except one of the cases of the varicose external saphenous type. In this case fluid injected into a perforating vein above the middle of the calf passed downwards in the posterior tibial venæ comites to the same level as that injected into a perforating vein lower down (see Fig. 8). Apparently these veins were incompetently valved over a distance of at least two to three inches. The fluid injected into the upper perforating vein was only prevented from escaping back along the lower perforating vein by the competent valve guarding this channel. The case may be recorded, therefore, as an example of the congenitally varicose deep vein type. The absence of the femoral valve is only regarded as a disability if the terminal saphenous valve is incompetent.

When the above groups have been separated off, there remain those cases in which the main channels themselves are adequately valved throughout and there is no leakage from them, either into the perforating or into the muscular veins. These constitute the normal or congenitally non-varicose type.

We find, then, in apparently normal young subjects without any sign of varicosity, the following groups: (1) normal or congenitally non-varicose type; (2) congenitally varicose internal saphenous type; (3) congenitally varicose external saphenous type (muscular varicosis); (4) congenitally varicose main deep veins type. Some subjects may possess the defects of more than one of these varicose types.

NORMAL OR CONGENITALLY NON-VARICOSE TYPE.

In about 70 per cent. of young subjects the perforating veins do not transmit rises of pressure in the deep veins to the superficial veins. In this type injected fluid remains confined to the main deep veins at whatever pressure the injection is made. High pressures were used after ligation of the femoral vein below the termination of the internal saphenous. If the pressure is raised excessively, the deep veins will burst before the valves of the perforating veins can be forced. The picture of the result of injection of the anterior and posterior tibials at high pressure is shown in Figs. 4 and 5. Here it will be noticed that, if the one vein is injected, there is no back flow into the other. This result shows, therefore, the presence of valvular protection near the termination of the anterior and posterior tibial venæ comites. There is frequently a connecting vein in the middle of the calf, in which case the picture given by injection is the same as that shown in Fig. 6, except that there is no escape to the superficial system via the perforating veins. In such cases, when the injection is made into either of the anterior or posterior tibial veins, there is no flow down the other below the connecting branch. Again the inference is the presence of valvular protection below this junction. A second communicating vein occasionally connects the two in

the lower third. The X ray appearance also suggests that the valves of the deep veins are very close-set.

The main points of the valvular mechanism in a fully protected deep venous system may be summarised as follows: (1) terminations of all muscular and perforating veins are valved; (2) terminations of the anterior and posterior tibial venæ comites are valved; (3) there are valves in the venæ comites just below the connecting veins; (4) the valves of the venæ comites are close-set; (5) the valves in the venæ comites, the terminal valves of the perforating veins and those of the muscular veins are normally capable of withstanding a pressure sufficient to burst the walls of these veins.

FIGS. 4 5 6.

FIG. 4.—The normal or non-varicose type. Injection of anterior tibial vein with high pressure, showing competence of all veins entering the deep system. (Antero-posterior view.)

FIG. 5.—The normal or non-varicose type. Injection of posterior tibial vein with high pressure, showing competence of all veins entering the deep system. (Antero-posterior view.)

FIG. 6.—Hereditary tendency to varicosis. Internal saphenous type. Injection of posterior tibial vein with low pressure, showing leak along direct perforating veins into the internal saphenous system. The communication revealed between the anterior and posterior tibial veins is common in both normal and varicose types. (Antero-posterior view.)

The result of muscular contraction of the calf, if the main deep veins are adequately valved, is merely to squirt blood up the deep veins towards the heart. All other routes are protected by valves. At the level of the knee the main deep veins form a single channel which is continued up the thigh through spaces more or less directly compressed by muscular contraction. Below the knee the deep veins are arranged as venæ comites and receive the perforating channels from both internal and external saphenous veins. The venæ comites are thinner-walled, more closely valved and subjected to more direct muscular pressure. The muscular veins themselves, which have even thinner walls and closer valves, are affected most of all by muscular contraction. This increasingly close approximation of valves as the walls become thinner and the muscular pressure more direct counteracts any tendency to back-flow, and prevents waste of propulsive energy during muscular contraction.

The more distal veins are thus completely emptied by pressure of surrounding muscles into the channels above the knee, which are less directly compressed. This relation of the muscles to the veins in the leg and thigh ensures the correct adjustment of pressure and is suitable for the return of blood from the leg through the main veins of the contracted thigh. It is suggested also that contraction in the muscle starts in the fibres nearest the distal insertion, and that this arrangement also favours the upward drive of blood. Both above and below the knee all entering tributaries, muscular and perforating, are valved to prevent back-flow. The act of relaxation from contraction produces a negative pressure in the deep veins corresponding to the muscles, and blood is drawn from the capillaries of the deep circulation and from the superficial veins via the perforating channels and driven up the deep veins by the next contraction. During alternate contraction and relaxation of the calf muscles, therefore, if normal valves are present in the deep and in the perforating veins, the deep circulation relieves the superficial system. In ordinary active movements of the leg with unrestrained respiratory actions, the return of blood from the superficial veins is effected by the suction of muscular relaxation and of respiration rather than by the pressure of the vis-a-tergo. The pressure in normal superficial veins, except in the standing inactive position, is therefore never related to the hydrostatic pressure represented by the height of the column of blood above it. When at rest in the erect position the internal saphenous route is the most direct one for the return of blood from the superficial system, the vis-a-tergo and the abdomino-thoracic suction through the femoral segment being the only forces at work. This route, which is peculiar to man, affords therefore a slight advantage if the terminal and parietal internal saphenous valves are competent.

CONGENITALLY VARICOSE INTERNAL SAPHENOUS TYPE.

In three out of the 28 young subjects the perforating veins in connexion with the internal saphenous system were incompetently valved, and would not protect the superficial veins in the leg against the rapid rises of intravenous pressure that occur in the deep veins during muscular contraction. In these cases the fluid injected into one of the posterior tibial veins reaches this superficial system along the perforating veins with a comparatively small pressure. In the case shown in Fig. 6 the femoral vein is not tied, so that there is little intravenous pressure; yet the injection has reached the internal saphenous vein via the two main perforating veins in the leg.

In this type, although the deep veins and the muscular veins are adequately valved, the perforating

veins of the internal saphenous readily permit flow from deep to superficial veins. When these veins are inadequately valved the result of muscular contraction is to squirt blood through the perforating veins into the unsupported superficial veins as well as up the deep system towards the heart. In so far as the perforating veins pass through muscle they are well supported at the moment when the pressure inside them is raised, so that the effect of the primary valvular defect is only shown in superficial veins when compensation is broken down.

Inquiries into the family history of the three cases of the first group showed that in two of the three varicosis was an hereditary condition on either the paternal or the maternal side. In the third case the history of one side of the family was unknown, but the maternal side showed no hereditary tendency. These experiments were made on the cadaver, and in the earlier ones, before the importance of the hereditary factor was appreciated, the records kept in normal cases were insufficient to allow the cases to be traced and further inquiries to be made for family tendency. The question of a negative family history is, however, an important one, and detailed statistics from a further series should yield interesting and profitable results.

Two of these cases were under 12 years of age—i.e., below the usual age of the onset of varicosis. The third was 18 years of age. In all three cases of this group the upper perforating branch of the calf was incompetent and in two of them the lower one was also. In one of them the internal saphenous terminal valve itself was slightly incompetent.

The valve of a perforating vein, though not absolutely terminal, is within the deep fascia. The vein at this point is protected from stretching by the support of the deep structures. I have considered the question of valvular protection of the perforating vein within and without the deep fascia but have found no evidence that this arrangement is the basis of the divergence of this type from the normal. Macroscopical examination of the perforating veins on dissection showed usually no trace of valves, but in one instance the presence of a rudimentary or atrophied valve was noted. Microscopical sections of the superficial veins in the neighbourhood of the perforating veins could in no way be distinguished from sections from the non-varicose types at the same level. The valvular incompetence is not secondary to weakness of the wall and may therefore be regarded as the primary defect.

This type may be subdivided into three groups:—

(*a*) *Terminal valve of saphenous alone incompetent.*—No case of this group was present in this series, but it is not rare clinically as the main defect. Here the parietal saphenous valves are exposed to the pressure of the superior reflux from the terminal segment of the femoral vein. In a small percentage of cases the femoral valve is absent and there is a true abdominal reflux into the saphenous. When the whole parietal system of the internal saphenous has given way before the pressure, this reflux is demonstrable as Trendelenberg's sign. In the upright position the veins of the leg are exposed continuously to the pressure of the column above, and a feeling of weight in the legs is then a constant symptom. As the valves of the other perforating veins are competent, there is no inferior or muscular reflux. Any blood removed from the veins by the suction of calf relaxation is, however, replaced from above, so that walking does not relieve the pressure.

(*b*) *Terminal valve competent but perforating veins of the calf incompetent.*—In these cases the superficial veins in this situation are exposed to the powerful inferior or muscular reflux. The amount squirted through is limited, and the effect of this reflux depends on the state of fullness of the veins. Its effect is therefore greatest in those people whose employments involve standing for long periods. During exercise there is a reflux corresponding to muscular contraction, but the superficial veins are partially emptied by the suction of relaxation from contraction. These patients have not the same feeling of weight in the leg as those of group (*a*), and walking relieves the pressure.

(*c*) *Both terminal valve and perforating veins of the leg incompetent.*—Where the whole parietal system has been broken down the vein is constantly filled by the superior reflux. The squirt of muscular contraction therefore acts on a continuously distended vein. The amount withdrawn by relaxation is replaced by descent of blood from above. These cases have a feeling of weight due to the superior reflux, which is at once relieved if the saphenous trunk is either ligated or obliterated.

CONGENITALLY VARICOSE EXTERNAL SAPHENOUS TYPE (CALF-MUSCLE VARICOSIS).

In two out of the ten young subjects certain muscular veins of the calf were not competently valved. These veins, as has been noted, may also be regarded as indirect perforating veins associated with the external saphenous system. The main entrance of the external saphenous vein was competent in the whole series. Here fluid injected into the deep veins did not reach the superficial veins, but flowed readily into certain muscular veins of the calf, and macroscopical examination after dissection of the affected veins showed that the reflux resulted from complete absence of valvular protection. Any or all of the muscular veins in this situation may show this incompetence, but when those affected belong to the gastrocnemial or soleal group (Fig. 7) the corresponding part of the external saphenous system has a very limited barrier of protection from the muscular drive, and superficial varicosis usually develops.

This group is of considerable interest in relation to Verneuil's findings that the intermuscular portion of these veins was varicose while the termination was of normal size. As a result of his observations on varicose subjects he concluded that varicosis commences in the deep veins, particularly those of the calf of the leg. It is also found in the peroneal vein. He attributed the condition to obstruction at the aponeurotic openings through which veins passed, especially the soleal veins. Some of these veins which Verneuil described are undoubtedly connected with the indirect perforating veins of the external saphenous system.

The above experiments place the primary cause of the varicosis commencing in this situation, not with the aponeurotic covering, but in the terminal and parietal valves of the common channel of the indirect perforating and muscular veins (Fig. 3). They do not, however, exclude the possibility of localised parietal valve incompetence apart from terminal valve incompetence in these muscular veins. The two cases in this group were aged 17 and 19 years and were within the varicose age. In both cases varicosis existed in one or other of the parents. In one, deep vein incompetence over a certain length of main vein was also present. In this type, although the direct perforating veins of the internal saphenous and most of the muscular veins of the limb are competent, certain muscular veins of the calf (indirect perforating veins of the external saphenous) are incompetent. An

incompetent indirect perforating vein is usually associated with an incompetence of the muscular vein, and an aching pain in the calf accompanies the condition.

CONGENITALLY VARICOSE DEEP-VEIN TYPE.

It is not possible to give any idea of the frequency of this type, as only six cases were examined and two of these were specially selected as having muscular varicosis. The femoral valve, which, situated beneath Poupart's ligament, dominates the whole venous system of the lower limb, is not infrequently absent. The effect of its absence on an incompetent internal saphenous system has been noted. The effect on the deep circulation is not marked. The deep veins may also be inadequately valved below the knee. In one of these cases showing muscular varicosis, the close valving noted in the posterior tibial venæ comites was interrupted over a considerable area (Fig. 8). Macroscopical examination of the channels after dissection showed almost complete absence of valves in and immediately above the part which the opaque injection method showed to be incompetent. Varicosis of the posterior tibial was recorded by Verneuil, but he specially noted that he never met with a dilatation of the anterior tibial vein. When the deep veins are closely valved, muscular contraction must result in an orderly flow along them, but valvular incompetence throughout a considerable length of the deep vein is likely to progress to serious varicosity, for a long column of blood may be flung back along the distensile vein against the flaps of the first competent valve of the main channel or of the perforating vein. More strain is imposed on these valves, and if the valve of the perforating vein gives way, the rapid development of severe superficial varicosis is likely to follow. Moreover, it is impossible to eliminate the varicose segment from the circulation, and it is difficult to evolve a rational and efficient treatment.

Conclusions.

Though the series is not large enough to be conclusive, these experiments suggest that the inadequacy or absence of the valves—more often those of the perforating but occasionally those of the deep veins, particularly the posterior tibials—is a factor commonly underlying the hereditary tendency to varicosis. This valvular defect is apparently the primary lesion. There is no evidence of weakness of the wall and certainly no sign of dilatation of superficial veins.

The perforating veins include all the channels through which the superficial system drains into the deep circulation. Among them are the terminal portions of the internal and external saphenous vein, which are merely specially developed direct perforating communications. The direct perforating veins of the internal saphenous and the indirect perforating veins of the external saphenous system are all seen to be often affected.

The effect on the superficial system of this congenital incompetence of the perforating veins is not usually apparent until after adolescence. During the period of growth compensation is adequate. This is probably accounted for by the following facts. Prior to adolescence occupations involving prolonged standing are few, the muscles themselves are constantly active and their tone is usually good, the leak back through small veins supported by these muscles is slight, the elasticity of the superficial vein wall is considerable, the diameter of the vein is smaller, and finally, owing to the smaller stature, the hydrostatic pressure in the superficial veins is less. With regard to the indirect perforating veins of the external saphenous: although the muscular veins are incompetently valved at their terminations and in the last part of their course, there is still some valvular protection for the superficial veins, and superficial varices do not arise until this is broken down. If varicosis of the deep veins over a considerable area is present, not only is the condition likely to be more extensive and rapidly progressive, but cure is more difficult.

FIGS. 7. 8.

FIG. 7.—Tendency to varicosis. Calf muscle and external saphenous type. Posterior tibial veins injected with high pressure. Anterior tibial veins filled through communicating veins. No leak into internal saphenous system. Gross incompetence of calf-muscle veins into which drain the indirect perforating veins of the external saphenous. (Lateral view.)

FIG. 8.—Tendency to varicosis. (*a*) Calf muscle and external saphenous type. The veins of the calf muscle are filled from the main deep veins. (*b*) Main deep-vein type. Two perforating veins of internal saphenous injected with high pressure; injection into the upper perforating vein descended the deep veins to the level of the lower; further descent was limited by normal valvular arrangement. Injection into lower cannula did not alter the picture. (Lateral view.)

EXCITING FACTORS.

Given the inherited valvular weakness, the following exciting factors are of importance in connexion with the onset of varicose veins:—

1. Lack of tone or development of supporting muscles. The varicose condition very often comes on during a period of overwork or of recovery from illness.

2. Employments involving standing for long periods of time. The upright position tends to keep the superficial and deep veins full, so that with any contractions of the muscles a reflux through the perforating channels further distends the superficial system. Tight elastic garters may increase the fullness of the veins while in the standing position.

3. Any condition tending to produce weakening of the vein walls. A common example is the onset of varicose veins in pregnancy. This has been attributed to pelvic pressure but, as it comes on before the uterus is bulky enough to cause pressure, some authors consider it to be due to toxins, possibly of placental origin, circulating in the blood. It only affects women of the varicose type. The cases demonstrated above show for the most part complete incompetence of valves. It is probable, however, that many individuals suffer from an incompetence less complete than these subjects. In some the degree is marked

and the toxic effect of a single pregnancy produces a lesion from which the vein never recovers. In others the valves are less incompetent and the degree of recovery after the toxic effect has passed off is sufficient to allow the valves again to act competently. In some of these the valves may finally fail with the circulatory changes that occur at the menopause. Possibly other toxic or trophic conditions produce the same effect as pregnancy, but usually then the exciting cause is not intermittent and varicosis develops progressively. The endocrine disorders which are considered to be of importance in this connexion by Continental writers are regarded rather lightly in this country.

4. Any cause of obstruction to the venous return, such as pelvic tumour, thrombosis of the iliac or femoral vein. The effect of obstruction at openings in aponeurosis cannot be regarded as proved.

5. Any cause of abdominal straining—excessive efforts during defæcation or micturition, caused by constipation, urethral stricture, enlarged prostate.

6. The existence of a heart lesion resulting in venous back-pressure has the same effect as the upright position on full veins.

These exciting factors must all be considered in connexion with the treatment. In addition to blocking a superficial or perforating vein which is hopelessly impaired, it is necessary to keep up the muscular tone by massage and exercise, to avoid long standing, to remove where possible any intermittent or constant cause of back-pressure along the veins, and also to treat any toxic condition likely to impair other comparatively adequate perforating veins.

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THE TREATMENT OF ERYSIPELAS WITH VACCINES.

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The methods at present available for the treatment of erysipelas may be broadly classified as local applications, internal administration of drugs, and immunisation.

It would serve no useful purpose to enumerate the various medicaments employed as external applications or for internal administration. Most observers with an extensive experience of the disease will agree with Ker [1] "that all the systems of treatment advocated frequently fail to check the advance of the dermatitis, so frequently, indeed, as to justify us doubting whether they exert any favourable influence at all." Roger [2] is not impressed with the specific value of the various antiseptics applied externally, or drugs administered per os.

As pointed out by Meara [3] it is not easy to assess the value of any form of local treatment in a self-limited disease like facial erysipelas, the duration of which is so uncertain. It must be remembered that the natural tendency of the disease is towards cure, and we may reasonably assume that the patient gets better in spite of the remedies employed rather than because of them. A study of the literature from the therapeutic angle makes one wonder whether these points in the natural history of the disease are sufficiently appreciated.

Serum treatment has apparently been successful in the hands of some clinicians, whilst others have not been favourably impressed with the results obtained. Polyvalent antistreptococcal serum gave such disappointing results that its use in this hospital was discontinued several years ago. Recent research in the group of hæmolytic streptococci has led to the production of alleged specific antitoxic sera against scarlet fever, erysipelas, and puerperal infection. The specific scarlet fever antitoxic serum is of proven value. Conflicting reports about the efficacy of the respective antitoxic sera against erysipelas and puerperal infection are met with. These sera have been freely administered to patients in the City Hospital during the past three years. The results obtained will be published at an early date.

In that widely varying results have been reported by different observers, vaccine treatment is no exception to the other remedies employed in the treatment of infection with the *Streptococcus erysipelatis*. Whilst Sill,[4] Fischer,[5] Takaki,[6] Russell,[7] and Boidin and Tierny [8] have apparently obtained satisfactory results in isolated or small groups of cases; Erdman,[9] from his experience of vaccine therapy in 95 cases, concludes that this method of treatment is valueless. Vaccine treatment has also proved a failure in the hands of Boidin and Delafontaine.[10] Ker [11] wrote in 1920: "It is certainly desirable that more work on the therapeutic use of vaccines should be undertaken—a very long series of cases, adequately controlled, will be necessary to establish their efficacy in a disease so variable in its duration and severity."

In this paper I have collected observations on 570 cases of erysipelas, 470 of which were acute attacks, whilst 100 were of a subacute afebrile type.

Method of Investigation.

On admission to hospital, the cases were primarily classified into two groups. One group consisted of typical acute attacks characterised by marked constitutional symptoms. Subacute attacks, in which the systemic disturbance was negligible, formed the second group. To alternate patients in the acute group vaccines were administered, the others acting as controls. We thus have records of 235 acute cases treated with vaccines, and an equal number of patients suffering from acute attacks who received purely symptomatic treatment.

TABLE I.—*Original Site of Infection.*

Series.		Face, ears, or scalp.	Trunk	Genitals.	Arms.	Legs.	Total
Vaccine		207	10	4	0	14	235
Non-vaccine	Acute ..	203	6	4	6	16	235
	Subacute	94	0	0	1	5	100
Totals		504	16	8	7	35	570

The original site of the inflammatory process in the various groups of cases is shown in Table I.

As might be expected facial cases preponderate, amounting to 88 per cent. of the vaccine-treated series and 86 per cent. of the control group.

Treatment.

The therapeutic measures employed for the relief of delirium, insomnia, and high temperature were the same in all cases. The following local applications were tried: (*a*) lint kept constantly moist with a cold saturated aqueous solution of magnesium sulphate to which 10 to 20 per cent. of glycerin had been added; (*b*) collosol iodine . and (*c*) a 5 per cent. aqueous solution of brilliant green (as recommended by Adams [12]). The latter two preparations were painted on and beyond the inflamed area morning and evening. The solution applied to the inflamed area in various groups of cases is shown in Table II.

TABLE II.—*Local Applications.*

—	Acute series.		Sub-acute series.	Total.
	Vaccine cases.	Non-vaccine cases.		
Magnesium sulphate ..	156	161	80	397
Collosol iodine ..	51	44	0	95
Brilliant green ..	28	30	20	78
Totals	235	235	100	570

It will be seen from Table II. that suitable control cases were obtained in the acute non-vaccine series for each group in the vaccine series. We thus hoped to assess, and eliminate if possible, any variation that might arise from the alteration of the local treatment.

VACCINES.

The vaccines administered may be broadly grouped into "stock" and "hospital." The former group included commercial preparations containing *S. erysipelatis*, or *S. pyogenes*, polyvalent streptococcal vaccine, and a combined streptococcal and staphylococcal vaccine. The "hospital" vaccine was prepared from strains of *S. erysipelatis* isolated from the inflammatory area in six acute cases of the disease. An autogenous vaccine was administered to five patients. The relatively brief duration of the disease in the vast majority of patients proves a stumbling-block to the extensive employment of autogenous preparations.

Whilst the vaccine was injected subcutaneously in all cases, the total dosage and the interval between injections varied considerably. One hundred and thirty-six patients received a course of six injections administered either daily, or at two-, three-, or four-day intervals. Fifty cases received either four or five injections of vaccine. To the remaining 49 individuals from one to a maximum of ten doses were administered. The actual number of cocci injected varied according to the severity of the infection and the age of the patient, ranging from a primary dose of 250,000 organisms in an infant 3 weeks old to a maximum primary injection of 50 million streptococci. The average course for an adult ranged from an initial dose of 5 million streptococci to a final injection of 200 million organisms. The usual interval between injections was three days. A course of daily injections ranging from 1 to 20 million cocci was administered to a small group of sharp cases. The dosage of mixed vaccine rose from an initial injection of 10 million streptococci combined with 500 million staphylococci to a maximum dose of 100 million streptococci plus 5000 million staphylococci.

Result of Vaccine Treatment.

In endeavouring to estimate the therapeutic value of the vaccine employed, attention was paid to (*a*) the duration of pyrexia, (*b*) the extent of spread of the inflammatory lesion, (*c*) the incidence of complications, (*d*) the occurrence of relapses and second attacks, and (*e*) the mortality-rate. The following criteria were adopted:—

Day of Crisis.—The day on which the morning or evening temperature was first normal and did not subsequently rise, except when due to an obvious complication, was considered as the day of crisis.

Day of Cessation of Activity.—Day on which the local inflammation had entirely subsided.

Wandering Type.—Implies invasion of neck or trunk from a primary focus on either face or limb, or of limb or face from an original focus on the trunk.

The age and sex of the patient, and the day of disease on which the patient was first admitted to hospital, are of importance, when the value of any method of treatment for erysipelas has to be assessed. Whilst the gravity of erysipelas at the extremes of life is common knowledge, the fact that the death-rate tends to be higher in males at all ages than in females is perhaps not so widely appreciated. The age and sex of vaccine-treated and control cases are noted in Table III.

TABLE III.—*Age and Sex of Acute Cases.*

Series.	Sex.	Age-period in years.											Totals.
		Under 1 yr.	1–4	5–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	
Vaccine	M	6	8	5	11	14	15	23	16	10	3	1	112 } 235
	F	6	4	3	18	17	15	24	18	14	4	0	123 }
Non-vaccine	M	7	6	1	6	4	13	22	18	13	4	0	94 } 235
	F	3	8	2	26	28	16	22	21	10	4	1	141 }
Totals ..		22	26	11	61	63	59	91	73	47	15	2	470

The number of patients under 5 years and above 60 years of age was 56 in both groups. Unfortunately, the sex incidence is not so strictly comparable. Males form 47·7 per cent. of the vaccine-treated group as against 40 per cent. of the control group.

Table IV. gives us information regarding the day of disease on admission to hospital in the two groups of cases.

TABLE IV.—*Day of Disease on Admission to Hospital.*

Series.	Day of disease.														Totals.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Vaccine. ..	15	55	64	35	38	11	3	8	1	1	3	0	1	0	235
Non-vaccine..	13	61	57	50	24	11	8	6	0	0	2	2	0	1	235
Totals ..	28	116	121	85	62	22	11	14	1	1	5	2	1	1	470

The average duration of illness prior to admission to hospital in the 235 cases treated with vaccine was 2·67 days. In the 235 non-vaccine treated (control) cases it was 2·64 days.

The two groups are strictly comparable as far as age distribution and duration of disease prior to hospital treatment are concerned. The sex distribution unfortunately varies to a slight degree.

DURATION OF PYREXIA.

In facial erysipelas the temperature tends to fall more or less abruptly with the cessation of the inflammatory process. In the absence of complications, the period of pyrexia may be regarded as a fair estimate of the duration of the illness. Table V. shows the duration of pyrexia subsequent to admission to hospital in the two groups of cases.

TABLE V.—*Duration of Pyrexia Subsequent to Admission to Hospital.*

Series.	Days.														Totals.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Vaccine.. ..	36	38	34	34	27	11	16	7	8	8	5	1	2	8	235
Non-vaccine..	18	33	40	34	38	20	9	11	4	7	1	2	4	14	235
Totals ..	54	71	74	68	65	31	25	18	12	15	6	3	6	22	470

The average duration of pyrexia subsequent to admission to the wards in 235 vaccine-treated cases was 4·97 days. When we add this figure to the average duration of illness before admission—namely, 2·67 days—we arrive at an average total duration of disease in the vaccine-treated series of 7·64 days. In the 235 control cases the average duration of pyrexia subsequent to admission to hospital was 5·41 days. When we add this to 2·64 days, the average duration of illness prior to admission to the wards, we find the average total duration of disease in the control group amounted to 8·05 days.

EXTENT OF SPREAD OF INFLAMMATORY PROCESS.

Should vaccine therapy be efficacious, one would expect that the tendency of the inflammation to "wander" would be much curtailed. The incidence of the wandering type of erysipelas in the two groups of cases is shown in Table VI.

TABLE VI.—*Incidence of "Wandering" Type.*

Cases.	Extent of spread.			Totals and per cent.
	Face to neck.	Face to trunk.	Trunk to limbs or vice versa	
In 235 vaccine	17	18	9	44(18·71)
In 235 non-vaccine ..	11	33	9	53(22·5)

Whilst the figures are in favour of the vaccine-treated group, it is to be noted that extensive spread of the inflammatory lesion occurred in 44 cases in spite of vaccine administration.

INCIDENCE OF COMPLICATIONS.

The various complications met with in the two groups are given in Table VII.

TABLE VII.—*Complications.*

—	Abscesses and cellulitis.	Broncho-pneumonia.	Nephritis.	Pyæmia.	Arthritis.	Totals.
Vaccine series (235) ..	10	2	2	1	0	15
Non-vaccine series (235)	10	4	2	1	1	18

It is disappointing to note that the development of abscesses and cellulitis was apparently unaffected by the administration of vaccine. The lower incidence of broncho-pneumonia in the vaccine-treated series is interesting, although, owing to the relative infrequency of this complication, not entirely convincing.

INCIDENCE OF RELAPSES AND RECURRENCES.

A recurrence may be defined as a repetition of the disease after an interval of months or years. As a purely arbitrary standard, we shall consider a reappearance of the disease within three months of the previous attack as a relapse. Where a period of more than three months has intervened, then a flare up of the erysipelatous process will be regarded as a recurrence. Sixteen cases in each group suffered from a relapse whilst still in hospital. In the vaccine-treated group another four patients were readmitted to hospital within three months of the previous attack and will thus be regarded as suffering from relapses. The percentage of relapses in the vaccine-treated series amounted to 8·5, as against 6·8 in the control series.

No fewer than ten patients who had received a course of vaccine during one attack of erysipelas were readmitted with, in most cases, an equally sharp second attack of the disease from four to 29 months later. Details of two of these cases, chosen at random, are appended:—

CASE 1.—Mrs. A., aged 35. Original attack December, 1921. Facial. Stock streptococcal vaccine. Five doses at three-day intervals ranging from 20 million to 400 million cocci. Second attack March, 1923. Facial. Stock streptococcal vaccine. Six daily doses, 5 to 15 million cocci. Relapse occurred fourteenth day in hospital.

CASE 2.—Mrs. B., aged 58. Original attack February, 1922. Facial. Six doses mixed streptococcal and staphylococcal stock vaccine administered every third day, ranging from 10 million streptococci plus 500 million staphylococci to 200 million streptococci plus 1000 million staphylococci. Second attack March, 1923. Facial. Temperature ten days.

MORTALITY.

In Table VIII. we have the deaths which occurred in the various age-groups.

TABLE VIII.—*Deaths.*

Series.	Result.	Age-period in years.									Totals.
		Under 1 year.	1–4	5–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–	
Vaccine	R	6	11	8	29	31	27	44	32	21	5	0	214
	D	6	1	0	0	0	3	3	2	3	2	1	21
Non-vaccine	R	6	12	3	30	32	28	40	34	19	6	1	211
	D	4	2	0	2	0	1	4	5	4	2	0	24

R = Recovered; D = Died.

The death-rate in the vaccine-treated series was 8·94 per cent. as compared with a rate of 10·21 per cent. in the control group. The slight variation in favour of the vaccine series need not, in my opinion, be regarded seriously. It is only fair to remember, however, that the preponderance of males in the vaccine-treated patients would have led one to expect a rather higher mortality in that group than in the control series.

LOCAL TREATMENT.

Without going into detail, it may be stated that a critical analysis of the various local applications led us to the conclusion that in no case did they limit the spread or materially diminish the activity of the inflammatory process. The patients certainly testified to the alleviation of subjective symptoms which followed the application of all three lotions. I still favour as a local application a cold saturated aqueous

solution of magnesium sulphate to which 10 to 20 per cent. of glycerin has been added.

Conclusions.

The study of 235 carefully controlled acute cases of erysipelas has led to the following conclusions. The administration of stock or autogenous streptococcal vaccines, or mixed staphylococcal and streptococcal vaccines, in erysipelas does not (*a*) shorten the duration of the attack, (*b*) prevent extensive spread of the inflammatory process, (*c*) lessen the incidence of common complications such as abscesses and cellulitis, (*d*) diminish the occurrence of relapses, (*e*) prevent recurrences, or (*f*) have any appreciable effect in diminishing the mortality from the disease.

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SULFOSIN THERAPY.

BY T. D. POWER, M.D. DUB., M.R.C.P. LOND., D.P.H., D.P.M.,

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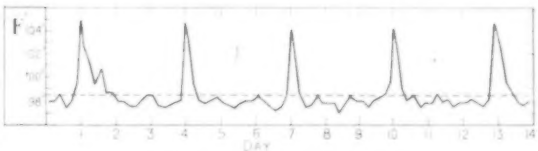
IN a paper published at the end of last year Schroeder[1] advocated the use of a preparation of sulphur in oil, known as Sulfosin, in the treatment of general paralysis and certain other nervous and mental disorders. Since that date several other publications dealing with the same subject have appeared, among which may be mentioned those of Harris,[2] Shilvock,[3] and Patterson and Switzer.[4]

For a period of about eight months I have employed injections of sulfosin in the treatment of 14 cases of certified insanity, the majority being general paralysis of the insane. Unfortunately the type of general paralytic who finds his way into a mental hospital is more often than not in an advanced state of cerebral dissolution. His nervous tissue has already undergone a certain amount of irreparable damage and the most that can be achieved by any form of therapy is the arrest of the processes of destruction and the limitation of dementia. Exceptionally, patients are admitted at an early stage of the disease, and it is now generally conceded that very often these may be restored to complete normality by artificially induced malaria. Where, however, gross neuronic damage already exists, one can only appraise the therapeutic worth of any remedy by observing the treated cases over a number of years and noting whether or not the disease has been arrested. For this reason no attempt will be made here to comment on the curative value of sulfosin in the treatment of the complaint for which it was first advocated, but rather to indicate some points of interest about the therapy itself.

Pyrexia.

Regarded purely as a pyrexia-producing agent, sulfosin is, in my experience, far superior to any other substance which has been suggested for this purpose. If Schroeder's directions[1] are carefully followed, an intramuscular injection of this preparation will in the vast majority of instances produce a high temperature within the ensuing 24 hours, and this will almost invariably have completely subsided within 72 hours. By altering the dose the height of the temperature can be regulated with singular accuracy, and usually it is quite unnecessary to employ maximum doses in order to produce an intermittent pyrexia of 104° F.

CHART 1.

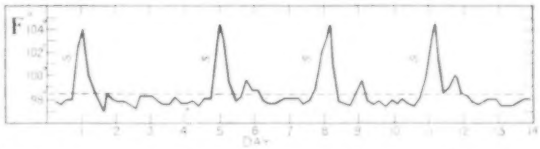


Pyrexia of induced quartan malaria.

A temperature chart closely resembling that of malaria can be obtained without any difficulty, as the accompanying records of actual cases clearly demonstrate.

Chart 1 is that of a case of a general paralytic undergoing treatment by induced quartan malaria and needs no special explanation. Chart 2 is taken from another case of general paralysis who was undergoing sulfosin treatment. In the malaria chart rises of temperature to between 104° and 105° F. are recorded regularly every 72 hours, whereas in the other chart similar pyrexial bouts are produced at any desired interval by an injection of 4·5 c.cm. of sulfosin at 11.30 A.M. on the previous day. As compared with the pyrexia associated with a malarial rigor, the temperature produced by sulfosin takes a little longer to subside, and there is usually a slight secondary rise on the second night following the injection. This secondary elevation is very characteristic of fever induced by sulfosin, but it should be noted that in the case illustrated the temperature had always entirely subsided within 48 hours.

CHART 2.



Pyrexia induced by sulfosin. Injection of 4·5 c.cm. sulfosin at 8.

I usually confine myself to eight or ten injections in one course of treatment, but every case has to be judged on its merits as in malaria therapy. A few weeks are allowed to elapse before a second course of injections is given, and this may be followed later by a third course. No marked toleration appears to be established; similar rises of temperature can be obtained in the third course with very much the same doses as were employed at the commencement of the treatment.

Leucocytosis.

One of the most characteristic effects of sulfosin is the very considerable leucocytosis. This reaches its maximum 24 hours after each injection, and in a number of cases the white count has not returned to normal in 48 hours. The accompanying table shows the leucocytic changes which occurred in the blood of four of my cases. The counts were performed half an hour before each injection, and again at intervals of 3, 24, and 48 hours after it, care being taken to avoid the possibility of a post-prandial leucocytosis.

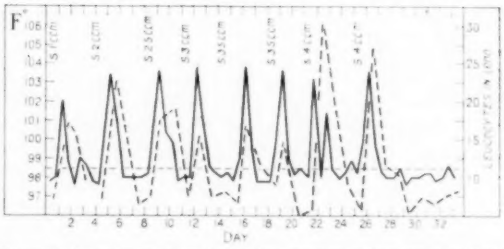
Time before and after injection.	Leucocyte count.			
	(1)	(2)	(3)	(4)
½ hour before	10,400	8,540	7,840	5,280
3 hours after	19,200	8,400	8,800	4,800
24	31,200	16,000	28,000	15,900
48	14,200	8,700	16,800	8,400

A differential count at the height of the leucocytosis showed in the majority of instances a marked relative increase of neutrophil polymorphonuclear cells, so that it is very unlikely that this phenomenon is due to a mere change in blood volume. It indicates rather that there is a general stimulation of the blood-forming organs. In certain cases a white blood count was done every morning at a fixed hour during a course of eight sulfosin injections. The results were very interesting and an attempt has been made to record graphically one such series of counts in Chart 3.

The unbroken line represents the maximum morning and evening temperatures. The broken line indicates the course of the daily white count, which was taken at 9.45 A.M. The amount of each dose of sulfosin, which was always given about 11.30 A.M., is also recorded. The chart shows faithfully the leucocytosis which follows each injection of sulfosin. After the seventh injection the leucocyte curve suddenly rises to a very high peak, and this is succeeded by an almost equally high elevation of temperature. A similar leucocytic crisis at about the time of the seventh sulfosin injection is reported by Karl Loberg[5] of Lund, who treated a number of cases of dementia præcox by this method. My impression is that such extreme leucocytic reactions should be regarded as Nature's distress signals and are indications that the injections should be temporarily discontinued. If Chart 3 be further examined it will be observed that there is no constant ratio between the extent of the leucocytosis and the height to which the temperature rises; nevertheless some relationship definitely exists, because in the only one of my 14 cases in which pyrexial bouts above 103° F. could not be obtained, the leucocytic responses were similarly poor, except after the sixth and seventh injections, when they were very considerable.

These effects of sulfosin on the white blood cells are of absorbing interest and are worthy of much more detailed examination. Whether or not this substance ultimately proves of use in the treatment of general paralysis, we have at our disposal a pyrexia-producing agent of considerable value and one possessing distinct therapeutic possibilities.

CHART 3.



Pyrexia (continuous line) and leucocytosis (interrupted line) following injection of various amounts of sulfosin.

My thanks are due to Dr. G. Masefield, medical superintendent of Brentwood Mental Hospital, for facilities afforded and to Mr. A. Petit, senior laboratory assistant of the hospital, for his willing help in the performance of innumerable blood counts.

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CLINICAL AND LABORATORY NOTES

TOBACCO-SMOKING AND HIGH BLOOD PRESSURE.

BY H. H. SANGUINETTI, M.D. OXF.

"HIGH pressure is an attempt of the organism to maintain the equilibrium of its circulation." This quotation from Clifford Allbutt is placed at the head of the chapter on "the causation and significance of high arterial pressure" in Halls Dally's treatise on "high blood pressure." The conclusion to be drawn from such a statement is that it is worse than useless to lower the blood pressure in these cases unless one can at the same time remove the cause. Halls Dally proceeds, however, to point out that "the primary cause or causes of pathologically high arterial pressures are not definitely established," finally tabulating eight possible causes of the condition, among these being toxins.

There has been some discussion on the rôle played by the toxin of tobacco-smoke in producing or maintaining high blood pressure, and the importance of the discussion is great now that the habit of smoking is so widespread among both sexes. As with all our minor vices, medical opinion is inclined to favour moderate indulgence in the habit, probably a socially wise but hardly a scientific attitude. As a contribution to the study of this question of the influence of smoking on blood pressure the following case is of interest:—

The patient, a man then aged 54, consulted me in September, 1927, about a pain of moderate degree in the right loin, probably rheumatic. He had suffered from nephritis while in France in 1916, and there was some permanent damage to the kidney, the urine constantly containing a trace of albumin. He was micturating frequently, and an estimation of his blood pressure gave a systolic reading of 235 mm. Hg, with a diastolic pressure of 135 mm. The heart was considerably enlarged, with the apex-beat in the sixth space one inch external to the nipple line. The heart sounds were normal, with the exception of some accentuation of the second sound at the base. The radial arteries did not appear to be affected with arterio-sclerosis. The Wassermann reaction was negative.

The history and the clinical findings suggested that the primary condition was chronic nephritis with secondary arterio-sclerotic changes. The patient did not take alcohol,

but smoked about 17 cigarettes a day. Although there were no obvious disturbances of health, except a feeling of lassitude, such a high blood pressure in a nephritic subject could not but be regarded as serious. Tests of renal function were satisfactory, showing blood-urea 0·038 per cent., urea concentration 2·9 per cent., and range of urea concentration (Calvert's test) 2·2 per cent. to 1·45 per cent. The last test indicated some impairment of water excretion, but there was no other evidence of water retention.

For three years the patient ran through the gamut of treatments: iodine, thyroid extract, a vaccine from extracted teeth, high-frequency current, venesection, a course of treatment at Harrogate, and the oral administration of sodium thiosulphate. Venesection (very temporarily) and sodium thiosulphate reduced both systolic and diastolic pressures considerably, but the latter made the patient feel so poorly that he discontinued it. In May of this year the blood pressure was 230/130; the general condition was much the same, with a possible slight impairment of renal function, the urea concentration (which had been 3·7 per cent. in 1928) being now only 2·6 per cent.

Without hope of dramatic change I urged the cessation of tobacco-smoking, a measure I had unsuccessfully urged when I was first consulted. The patient now accepted my advice, and by a gradual process had ceased smoking at the end of a fortnight. Coincident with the reduction of smoking the blood pressure fell to 182/95, while cessation of smoking was followed by a further fall to 175/85.

It cannot be said that in consequence of the reduction the patient felt better, but he had not the unpleasant sensations accompanying the fall produced by the exhibition of sodium thiosulphate, and the urea concentration of 3·6 per cent. indicates improvement of the renal function. Time is required for the organism to adjust itself to so considerable a fall in blood pressure. However, the prognosis appeared distinctly more hopeful, when the patient resumed his cigarettes, apparently not considering the lowering of the blood pressure without a more immediate improved sense of well-being sufficient compensation for the great deprivation of smoking. The blood pressure responded by rising, and when the habit had been fully resumed it had returned again to its previous high level. As further evidence of the effect of smoking on this patient I am inclined to welcome this fall from grace, but I fear that the continued high blood pressure may soon have produced irremediable changes in the circulatory system and kidneys.

London.

A CASE OF UNDULANT FEVER.

By Denton Guest, M.D. Sheff.,
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AND
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MEDICAL OFFICER OF HEALTH, HUDDERSFIELD.

On August 18th, 1929, a man was admitted to the Huddersfield Royal Infirmary complaining of attacks of shivering, intense sensations of bodily heat, followed immediately by very profuse sweating. He had suffered from this condition for three weeks before his admission to hospital.

On July 20th, 1929, he went to Colwyn Bay for his holidays and remained there until July 31st. During this period he had one or two shivering attacks, after which he perspired very freely, and felt generally out of sorts. He returned to work on August 1st, and on August 4th he felt very ill, had violent shivering attacks, and could not keep warm, even when near a hot fire. His doctor was called in and noted that he had a high temperature, and also that he complained of aches in his legs, but was unable to find any definite muscular pains or any evidence of gastro-intestinal disturbance. Between the rigors the man appeared to be in quite good health, but on August 18th the doctor decided to get him to hospital for investigation, and he was accordingly admitted on that day.

Clinical examination in hospital revealed nothing of note; the spleen was not enlarged, but his chart soon showed that there was a rise of temperature each afternoon, at almost the same time each day, to the region of 100° to 102° F.; this state of affairs continued for four days. In each case the rise of temperature was accompanied by a typical rigor and was succeeded by the most profuse sweating.

The question of malaria arose, but blood films failed to show any parasite, and the only occasions on which the patient had been out of England were in 1911 to Jersey, and on several occasions since to Ireland. Blood examinations revealed a leucopenia (5000 leucocytes per c.mm., of which 41 per cent. were lymphocytes). Blood cultures were collected on three occasions but remained sterile, even after ten days' incubation at 37°C. The Widal reaction was negative to *B. typhosus* and *B. paratyphosus* A and B. Examination of the urine and fæces proved negative.

At this stage a tentative diagnosis of undulant fever was made, and was confirmed by testing for agglutinating power the serum of the patient with the standardised agglutinable suspensions of *B. melitensis* and *B. abortus* supplied by the Standards Laboratory, Oxford. The patient's serum caused agglutination to a titre of 1 in 500.

By this time his condition had markedly improved; the rigors, which had occurred every day at first, became less frequent, and at the end of three weeks had completely ceased, no further rises of temperature being noted.

As soon as a diagnosis of undulant fever was confirmed it was deemed prudent to notify the medical officer of health for Huddersfield, in order that he might trace the avenues of infection. This was a matter of considerable difficulty, in view of the fact that the patient had begun to be ill in Colwyn Bay, and our thanks are due to Dr. W. McKendrick, medical officer of health for Colwyn, for his help in inquiring into the question of any similar cases, and of any cases of abortion in cattle in his area. He found no evidence of any such cases.

One of us (S. G. M.) instituted inquiries at all farms in the Huddersfield area from which milk had been supplied to the patient, but he was assured that no cases of cattle abortion had occurred in their animals, and he also noted that these farms had been recently inspected by the veterinary surgeon. Samples of milk were examined bacteriologically by the public health authority, with negative results, and samples, together with controls, were tested by one of us (D. G.) for agglutination of the suspensions of *B. melitensis* and *B. abortus*, again with negative results.

No other cases of a similar nature have been reported in the Huddersfield area, and this is evidently a sporadic case of undulant fever. We wish to emphasise the importance of coöperation, in all such cases, between the clinician and the public health authorities, with a view to tracing the source of infection, even though in our case we can only produce negative results. It would also seem worth while in the investigation of pyrexia of unknown origin to make the test for agglutination of *B. abortus* a routine procedure, as these cases appear to be on the increase in this country.

Our thanks are due to Dr. Jane Miller, honorary physician to the Royal Infirmary, Huddersfield, for permission to carry out these investigations.

Manchester Epileptic Colony Extension.—It has been decided to enlarge three of the houses of the David Lewis Epileptic Colony. Last year the average number of colonists was 376, and Dr. Alan McDougall points out in his annual report that these were patients who had failed to respond to medical treatment at home. The successes of the colony he attributes mainly to the general atmosphere and mode of life.

Swansea General and Eye Hospital.—In the report for the year 1929 attention is called to the difficulties of accommodation and the long waiting-list, which at the end of the year numbered 442. Accidents and emergencies represent approximately 50 per cent. of the total admissions; thus only half the number of beds are available for the normal numbers applying for hospital service. The average daily number of in-patients was 266·41, and the average stay 21·21 days. The average cost per bed occupied was £145 19*s.* 2*d.* The 28,891 out-patients cost 7*s.* 1½*d.* each. Employees' contributions totalled £24,816, an increase of £955 over the previous year.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

AT a meeting of this Section on Dec. 3rd, the President, Mr. C. H. FAGGE, being in the chair, a discussion on

Surgery in Diabetes

was opened by Prof. G. E. GASK. The subject fell, he thought, conveniently under headings—e.g., what should be done (*a*) when glycosuria is discovered in a patient for whom an operation of convenience (hernia, removal of appendix in the quiescent period) is proposed; (*b*) in a patient requiring a life-saving operation, such as intestinal obstruction or acute appendicitis; (*c*) in a case of gangrene associated with diabetes; (*d*) in pyogenic infection such as carbuncle associated with diabetes. In 1898 Treves wrote: "Diabetes offers a serious bar to any kind of operation for injuries involving open wounds; hæmorrhage or damage to vessels are exceedingly grave in the subjects of this disease." If a patient at that time came to St. Bart.'s and was discovered to have diabetes, operation was avoided. This was in pre-insulin days. The introduction of insulin had greatly modified surgical practice; operations previously undreamed of in diabetic subjects were now carried out with comparative safety.

Dealing with heading (*a*), he would say that, given proper treatment and a due quantity of insulin, there was no bar to operation, for there would be but little more risk than in the ordinary patient. Under heading (*b*) he would say that the life-saving operation should not be postponed. The surgeon should inject a proper amount of insulin and give an appropriate course of antidiabetic treatment. Under heading (*c*), he was speaking of the type of patient who had arterio-sclerosis plus diabetes in addition, with commencing gangrene of a toe. Here he did not feel justified in speaking dogmatically, as he did not feel quite sure. In pre-insulin days he would have advised amputation of the limb, high up where collateral circulation was best. Now a more conservative treatment could be carried out with safety. By the proper use of insulin, associated with warmth and light treatment, much could be done to prevent the spread of the gangrene and its change from the dry to the wet form. Under heading (*d*) he felt that more than in any other kind of case, insulin should be given, and given early, steps being taken to lessen the severity of the pyogenic infection, for suppuration had a serious effect on the diabetic process.

Local anæsthesia was to be preferred, said Prof. Gask, in the great majority of cases. But if local anæsthetics were not available or there was some good reason against their use, a general anæsthetic must be given. Operation had to be done quickly, and the choice of the anæsthetic must be subservient to that. If gas-and-oxygen was not sufficient, it should be supplemented by ether; chloroform was to be avoided.

MEDICAL ASPECT.

Dr. GEORGE GRAHAM said that under Prof. Gask's first heading the prime necessity was to make a diagnosis, for not every one who had dextrose in the urine was diabetic. If diabetes was diagnosed and operation was required, there should be a proper preparation of the patient by insulin and dieting. That should always be possible, unless the diabetes was very severe, in four to seven days. Every large hospital should by now, he thought, have an expert dietitian, with proper kitchen, so as to ensure a patient having the food he was supposed to have. Three hours prior to operation such patients should be given a definite dose of sugar, and 15 or 20 units of insulin; half an hour before operation was due to commence another dose of sugar should be given, to ensure that the patient had enough glycogen in the liver in case it was necessary to give ether as a general anæsthetic. In acute cases it was impossible to delay the operation while the patient was being prepared in the way mentioned; but if time allowed, a blood-sugar estimation should be done, 50 g. of dextrose being given by the mouth. Some people with severe diabetes did not have a high blood-sugar; a large dose of insulin did them harm. He gave insulin before the dextrose. If the patient was vomiting, sugar should be given intravenously in a pint of saline. Saline was useful in a vomiting patient, as it gave him back some of the salts he had vomited.

There was, he thought, no such condition as diabetic gangrene in the sense that diabetes predisposed to gangrene; these people had gangrene because they had bad arteries; possibly a badly chosen diet, with much fat, had helped to produce the arterial disease. But diabetes certainly made the gangrene worse. Once diagnosed the sooner pathogenic infections were dealt with the better, because all septic conditions adversely affected the patient's sugar tolerance. The longer such patients had the infection and were without due quantities of insulin, the worse would the diabetic condition become; any disease would have the same effect. A woman of 77 with carcinoma of the breast, for which radium was inserted, required double the amount of insulin during the time the radium was in situ in order to keep the sugar curve right. On the removal of the radium a return to the former insulin dose was possible. In such conditions as severe carbuncles insulin was very valuable, the same was true in many states of deterioration of tissue, and in certain patients who had not got frank diabetes.

DISCUSSION.

Dr. R. D. LAWRENCE wished, for practical purposes, to make a clear distinction between ordinary surgical procedures in diabetics, and surgery in conditions produced entirely or partially by diabetes. In the first group he considered that the surgeon need have no special considerations or special responsibilities. Patients in the second group required special thought. He showed a table of 163 cases of diabetes which had been operated upon, with 13 deaths. Most of the patients who died were elderly and were, he said, carried off mainly by complications to which anyone of similar age would be liable. In all these operations the thing to fear was the onset of acidosis. A glycosuria lasting only a few days needed little consideration so long as the sugar was controlled. It was impossible to lay down a standard of treatment for every case; each patient must be separately dealt with. Often there was a changing degree of sepsis in these conditions, and as the sepsis became better the diabetes grew less.

Chloroform was the worst anæsthetic because it had the greatest toxic action on the liver; even under the best conditions of treatment the liver of the diabetic never had as much glycogen as the normal

one; a liver deficient in glycogen was liable to suffer parenchymatous damage from chloroform. So long as no local sepsis was present, he thought local anæsthesia was best. For operations on the lower limbs, spinal anæsthesia was ideal. Avertin was largely used in American clinics for diabetic cases; he had tried it in two cases and had been very satisfied. It was important to avoid vomiting after operation; if the patient vomited and was not given carbohydrate and insulin he drifted into acidosis, and the vomiting became worse. After operation it was necessary to watch the patient closely, and, if necessary, to vary the treatment from hour to hour, certainly from day to day.

If the circulation was good, a case could be treated on the usual surgical principles, the best guide to the state of the circulation being the degree of pulsation in the dorsalis pedis artery. Sometimes there was present a combination of calcification and obliterative endarteritis. The skiagram was apt to mislead because apparent calcification did not necessarily mean that the leg must be amputated high up. In the presence of a rapidly spreading sepsis and lymphangitis there was no possibility of saving the limb; one could only strive to save life. In cases of what might be called the diabetic acute abdomen, it was difficult to decide what to do; it might be an acute appendix, a perforated gastric ulcer, or other abdominal catastrophe. If the temperature was raised, that was in favour of the pain and symptoms not being entirely due to the diabetic condition. If there was reason to suspect acute disease, like appendicitis, it was better to operate, even at the risk of being proved wrong.

Mr. CYRIL NITCH said that to deal successfully with cases of diabetes required close coöperation between surgeon, physician, and biochemist. In a man of 80 with prostatism, he had seen extreme nervousness produce a reduction of Fehling's solution; when the nervousness had passed the urine was normal again. Insulin must never be given in a haphazard way; it must always be controlled. A minor operation might be dangerous, whereas a major operation might restore the balance. When the case was not urgent, stabilisation could be produced by diet alone, or only a small amount of insulin might be needed before (and possibly after) operation. In emaciated and septic cases insulin must be given with caution, for only a small amount of it might cause hypoglycæmia. In the presence of severe acidosis which might develop two days after ether anæsthesia, glucose should be given intravenously. Fluid in quantity should be given, because comatose patients were rapidly dehydrated. He agreed that spinal anæsthesia was best for operations below the umbilicus. An objectionable sequel of gas-and-oxygen was cyanosis; unless administered by an expert it was not suitable for prolonged operations. He recognised two types of gangrene: (1) due to arterio-sclerosis—i.e., senile gangrene in a diabetic; (2) due to infection aggravated by diabetes but not always complicated by a defective circulation. Non-operative measures were applicable to superficial gangrenous patches or ulcers; these included systematised exercises—two minutes elevation of the limb, followed by three minutes depression—and the use of artificial sunlight. For sepsis and spreading gangrene high amputation should be done without delay.

Dr. OTTO LEYTON said it was not infrequent for a gangrenous patch to heal even when there was no appreciable pulse at the ankle. At the London Hospital he treated his cases of gangrene with hot saline, and with warmth for long periods. He could confirm the good results obtained by H. N. Mukhirjee, from the use in these cases of phosphotungstate of insulin.[1] It seemed as if, in the future, it might be possible to control diabetes mellitus by the administration of this insulin preparation by the mouth though it was true that about six times the usual dose was needed.

Dr. P. W. CAMMIDGE spoke of the high proportion of diabetics who had septic feet; when treated with insulin, local cleansing, and careful dieting even apparently hopeless cases recovered. He spoke approvingly of avertin as an anæsthetic. To cases of diabetes requiring operation he gave insulin and glucose before the operation, and an injection of glucose in a considerable quantity of fluid immediately after. The whole of the treatment should be controlled by blood-sugar analyses.

Mr. J. B. HUNTER spoke of the control of severe cellulitis in young patients by means of insulin; the process was in this way kept local, and the abscess could subsequently be evacuated. Diabetics often developed a sore on an unclean foot which was not gangrenous. These cases should be sat up in bed to check the tendency to spread into the tendon sheaths.

Dr. E. SKIPPER also emphasised the importance of the care of the feet, especially in the middle-aged. At the London Hospital it was the practice to watch these cases as long as possible, giving them local treatment such as saline baths, covering with a layer of gauze and exposure to the sun.

SECTION OF OTOLOGY.

AT a meeting of this Section, held on Dec. 5th, with Mr. ALEXANDER TWEEDIE, the President, in the chair, a discussion on

Intracranial Complications of Otitic Origin

was opened by Dr. GEORGE RIDDOCH, who dealt with neurological examination and the indications which should lead the clinician to suspect the spread of infection inwards and the presence of retained pus within the skull. His contribution, he said, might be regarded as complemental to a paper on the diagnosis and localisation of cerebral abscess, read by Dr. C. P. Symonds to the Section three years earlier.[2] What symptoms and signs should, Dr. Riddoch asked, lead to the suspicion that intracranial symptoms might develop in cases of ear infection? He thought it best to limit the discussion to cases in which adequate drainage had been established, as by spontaneous rupture of the drum, or by paracentesis. If in acute ear disease, in spite of good drainage, the patient continued to feel ill and had no appetite, had also headache and increased pulse-rate, spread of the infection was probable. After a few days the symptoms might subside, and not recur, owing either to the mildness of the infection or to the patient's natural powers of resistance. Yet the passage of the acute stage did not necessarily mean that danger was past. Instead of subsiding, the symptoms might merge into those of acute intracranial complications, such as lateral sinus thrombosis, extradural abscess, meningitis, and encephalitis. The occurrence of these symptoms should demand periodic examination for some months.

Acute complications.—Lateral sinus thrombosis was indicated by a swinging temperature, shivering or rigors, and tenderness over the jugular. Additional evidence was sometimes supplied by Queckenstedt's test. Extradural abscess was notoriously difficult

[1] See THE LANCET, Sept. 27th, p. 707.
[2] THE LANCET, 1927, i., 392.

to diagnose, especially in cases of acute otitis media before drainage had been established, as the symptoms were overshadowed by the aural condition. In regard to mastoiditis, Dr. Symonds doubted whether uncomplicated mastoid disease was associated with spontaneous complaint of headache, though tenderness to pressure was an almost constant and a very important sign. If that were true it was a great clinical help. Dealing next with meningitis, Dr. Riddoch considered that the qualification "serous" should be abandoned, as it had no pathological meaning. Meningitis might be mild or severe, localised or general, but it was always caused by pyogenic organisms involving directly the meninges. When the infection was of low virulence, no organisms were found in the cerebro-spinal fluid, though there was an increase of mononuclear cells. If no abscess formed the meningitis frequently cleared up. Absence of organisms from a sample of cerebro-spinal fluid drawn off was of great prognostic value. Mild cases of meningeal inflammation tended to clear up spontaneously if the source of the infection was eliminated. Concerning meningeal abscess, he recalled Dr. Symonds's remark that for some reason unknown the infection in the route from ear to brain was stopped at the level of the lepto-meninges and formed pus, which was shut off, so that the infection was prevented from spreading throughout the sub-arachnoid space, and the brain was affected only superficially.

Chronic complications.—Intracranial abscess was often not suspected, in spite of a history of aural infection, until general symptoms of raised pressure or gross focal signs were present; and even then hospital records showed that a wrong diagnosis was often made. The history was of the utmost importance in giving a clue to the nature of the lesion. Examination of the cerebro-spinal fluid should be made, for increased protein and cell count provided valuable information. Dr. Riddoch related a typical case of the condition, headache being a very prominent symptom. Another group characterised by recurrent headaches, although usually with the absence of other features, suggesting the formation of a chronic brain abscess, was chronic arachnoiditis. Sometimes, however, alarming symptoms such as papillœdema might arise. In one such case related by H. Cairns the papillœdema was followed by optic atrophy, succeeded by blindness, the child remaining otherwise healthy.

DISCUSSION.

The PRESIDENT agreed that tenderness over the mastoid or a limited mastoiditis was not a necessary indication that the mastoid was involved; he hoped it would not be included in the indications for operation. He also agreed that a substitute was needed for the term "serous" meningitis.

Sir JAMES DUNDAS-GRANT, referring to the diagnosis of lateral sinus thrombosis, said it usually was easy to get fluctuation between the internal jugular vein not exposed and the exposed sinus, and if that was absent the observer could be sure a complete blockage existed below. Extradural abscess could exist without any symptoms of it being present. With reference to mastoid tenderness in mastoiditis, otologists had laid it down that tenderness over the mastoid in the first week of acute suppurative inflammation in the ear indicated merely a congestion. But if it persisted longer something more was probably developing in the superficial cells. He had seen one or two cases of disease in the ponto-cerebellar angle in which the cerebellar symptoms were well marked, but disappeared when the dura mater was laid open and a puncture made in the meninges, allowing of the escape of fluid. In cerebello-pontine angle conditions the labyrinthine reactions should be done.

Dr. C. P. SYMONDS admitted the difficulty of deciding whether, in a given case, a cerebral abscess was or was not present. When it was reasonably certain that one was present, its localisation on neurological grounds was not particularly difficult. When a case was dealt with in which abscess was proved, it was valuable to review the history of the case and see what were the points which first led to the suspicion that such invasion had occurred. He would like otologists to decide at what point in a case of otitis media the headache, pain, fever, &c., must be regarded as indicating more than the usual ear condition—i.e., as justifying the suspicion of an intracranial complication; also, what was the normal clinical picture of post-operative convalescence from acute otitis media or mastoidectomy. He described a clinical picture which at first seemed to resemble that of cerebral abscess, but which he considered to be due to a localised basal meningitis with secondary internal hydrocephalus. He had had three such cases, and in each the story was much the same: an acute otitis media or exacerbation of an old otitis media, followed by symptoms indicating meningitis. Exploration showed the dura mater to be under great tension. There were no localising signs of cerebellar or temporal abscess in his three cases, and each of them made a complete recovery. He related one of them in detail.

Mr. J. S. FRASER said he was interested to hear Dr. Riddoch mention the time-honoured text-book dictum concerning tenderness along the internal jugular vein. In his own experiences this was not a symptom of lateral sinus thrombosis. He had found that mastoiditis alone seldom or never caused a temperature of over 100° F., except in the case of young children, and in adults suffering from influenza or other febrile conditions. The ordinary case of mastoiditis did not complain of headache after the operation; and should severe headache occur at such a time he suspected an intracranial complication, probably meningitis.

Mr. F. W. WATKYN-THOMAS said he did not see how mastoiditis alone could cause headache at the vertex unless there was some dural involvement. But the possibility of accessory sinus infection should always be borne in mind. In disease conditions at the cerebello-pontine angle he had several times noted that the patient had the head firmly tucked over to the affected side, when there was no question of sterno-mastoid involvement, and every effort to straighten it was resented.

Mr. T. B. LAYTON considered that after an acute mastoid all the untoward symptoms should be gone in 48 hours, and the pain should have ceased. If not, washing out the wound with a pint of saline should cause the temperature to come straight down. If this did not happen he would suspect some further complication. He did not think that tenderness over the mastoid was a symptom of inflammation of the cancellous bone, which was what one wanted to recognise; it was an indication that inflammation had spread through the cortical bone and was beginning to involve its periosteum. In acute otitis media pain disappeared so soon as the drum-head was ruptured or paracentesis had been performed, or it did so after the patient had had a good sleep. If, however, pain should appear there next day he would begin to suspect that the bone behind the

middle ear was involved. A thrombosed sinus should be left alone after dealing with the inflamed area around.

Mr. LOWNDES YATES said that sometimes he had been assisted by examining the type of mastoid which the operation revealed. In many cases the mastoid had thinned, and in those there was apt to be tenderness during the inflammation of the mastoid cells, due to the periostitis overlaying it. When the bone was very thick he had noted a liability to intracranial complications.

Mr. SYDNEY SCOTT spoke of the cases in which a brain abscess was so large that it involved the whole temporo-sphenoidal lobe and extended into the occipital lobe, and was undiagnosable by the physician or the neurologist. He had seen such a case without optic neuritis, and when the dura mater was exposed there was no increase in the intracranial pressure. In one patient he saw a brain tumour had been diagnosed for two years, but she was found to have an abscess in the region of the uncinate gyrus; it was an abscess of a solid type. No patient should be allowed to go to the post-mortem room with unrecognised empyema.

Mr. H. V. FORSTER referred to the value of exploration in the recognition of brain abscess, and mentioned five cases in which this enabled him to arrive at the diagnosis, and the patients got well.

Dr. RIDDOCH briefly replied.

Dr. A. B. ROSHER read a paper on the examination of the cerebro-spinal fluid as an aid to the diagnosis of otological conditions. Discussion followed and a number of cases were shown.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Maternal Mortality Report.

A MEETING of this Section was held on Nov. 21st, with Sir EWEN MACLEAN, the President, in the chair, when a discussion was held on the interim report of the Departmental Committee on Maternal Mortality and Morbidity. The discussion was opened by Dr. T. WATTS EDEN and Dr. J. S. FAIRBAIRN.

Dr. Eden described the general scheme of the Report and welcomed the Committee's endeavours to ascertain the "primary avoidable factor" in each of the 2000 deaths which were investigated. This factor was not necessarily, he said, the direct cause of death, as in some instances the factor was failure to carry out any antenatal supervision. Some interesting facts came out of the inquiry, one being the number of deaths which occurred during normal labour. The occurrence of sepsis in so-called normal labour was very high indeed, and in the majority of these cases no primary avoidable factor could be discovered. In explaining these two crucial subjects—viz., the cause of death in normal labour, and the frequency with which sepsis follows normal labour—the Report gave no help at all. The Committee's recommendations as to the provision of better treatment for cases of miscarriage in hospitals were to be commended. Dr. Eden discussed the training of medical students, and said that the schemes put forward by the Committee should have the utmost consideration. The increased number of obstetrical cases suggested by the Committee for the training of students could only be obtained if the Government and the local authorities were willing to place at the disposal of teachers very much increased facilities for the training of both students and post-graduates in connexion with the new hospitals which had recently come under the control of local authorities. Such an opportunity might never arise again, and it ought to be made use of to the utmost.

Dr. Fairbairn was impressed with the unanimity of the members of the Committee. He referred to other reports where the maternal mortality-rate was found to be diminished among the poorer classes, although the general idea is that it is lower among the better housed and better fed members of the community. Dr. Fairbairn discussed the social factors in these cases of maternal death and the influence of maternity insurance. He thought that if doctors did not attend cases of normal labour it would be difficult for them to keep themselves up in what one would call the ordinary normal labour. The health of the patient herself and all her social conditions had to be considered as being of the greatest importance. The relief of pain generally had brought about the consequence that pain is not as easily borne as formerly. The new situations of modern life must be considered, especially with regard to the maintenance of normal function. This applied to the problem of anæsthetics in labour.

Dr. W. H. F. OXLEY said that the Committee could not be blamed for not finding out the cause of maternal mortality. It was appointed first to advise upon the application to maternal mortality and morbidity of the medical knowledge at present available, and second to inquire into the needs and direction of further research work. It was the aim of the Committee to give the Government some practical method whereby a reduction in the maternal mortality could be effected and the direction in which further research should advance.

Prof. R. J. JOHNSTONE was concerned most with the education of the medical students, and this part of the Report was new. The problems were—can the teaching schools put these regulations into effect, and if so, will they produce a competent practitioner? These questions had been discussed by Prof. Munro Kerr elsewhere.

Lady BARRETT said the openers of the discussion had brought forward two important points in the Report. One was that only in 50 per cent. of the cases was the cause of death found. It was necessary, therefore, to look for the causes of sepsis elsewhere than in contact cases. The other factor was the woman herself, and this should be considered before any other. Practitioners were not necessarily all experts, but they should have reasonable skill, judgment, and knowledge. Would these regulations ensure the fulfilment of these conditions? It was difficult to get women to undergo antenatal supervision if it meant residence in hospital or attendance at a long distance clinic. The claims of her home were usually her first consideration.

Mr. W. GILLIATT said that the General Medical Council or the examining bodies do not insist on the present regulations being carried out with regard to 20 cases.

Dame LOUISE MCILROY thought the chief value of the Report was the crystallisation of the opinions of the representatives of societies and the obstetricians who gave evidence before the Committee. She believed that antenatal supervision should be carried out by trained obstetricians.

Mr. DONALD ROY said there was now an opportunity for making a very definite advance towards obtaining the requisite number of cases for medical students. The necessity for more obstetrical beds or facilities elsewhere must be pushed by the medical schools. The welfare of the patient was the first consideration when the administration of anæsthetics is considered. Women who were delicately nurtured had more fear

of the pain of labour than the women of the working classes, who were in closer touch with the reality.

Dr. G. W. THEOBALD gave the opinion that midwives should not be allowed to make vaginal examinations, and doctors should be restricted to forceps application only. Any other operation should be done by a specialist. More maternity hospitals are necessary throughout the country for the admission of complicated cases and for the training of students.

Prof. F. J. BROWNE reminded the meeting that the report was only an interim one. One of the chief problems was the cause of death in normal labour. He had a firm belief in Listerism as a prevention of puerperal sepsis. The whole scheme was based on a recognition of the fact that the psychology of women had changed and that she demanded premature interference because she could not bear pain well. Prof. Browne discussed the advisability of the direct responsibility of the teacher in signing up students for examination. The standard of training of the general practitioner was most important.

Mr. COMYNS BERKELEY believed that everything the Committee recommended should be carried out with regard to the training of medical students. The additional number of cases required could be found in the hospitals of the London County Council.

The PRESIDENT said that the report conformed very much with the opinions generally expressed by obstetric teachers.

Dr. EDEN and Dr. FAIRBAIRN replied.

SPECIMENS SHOWN.

Mr. JOHN H. HANNAN showed the following specimens: (1) Large bilateral Krukenberg's tumours of the ovary. (2) Endothelioma of the ovary. (3) A peri-urethral fibroma. (4) Dermoid cyst of the ovary with a basal-celled carcinoma in its wall. (5) Carcinoma of the body of the uterus from a young woman. (6) Carcinoma of the Fallopian tube. (7) Primary carcinoma of the urethra.—Mr. T. G. STEVENS, Mr. M. H. OLDERSHAW, and Mr. TREVOR DAVIES took part in the discussion. Mr. HANNAN replied.

REVIEWS AND NOTICES OF BOOKS

Diseases and Injuries of the Eye.

A Text-book for Students and Practitioners. Third edition by WILLIAM GEORGE SYM, M.D., F.R.C.S.E., late Ophthalmic Surgeon, Edinburgh Royal Infirmary. With 24 full-page illustrations, 15 of them in colour, and 58 figures in the text. London: A. C. Black, Ltd. 1930. Pp. 493. 12*s.* 6*d.*

EVERY text-book of worth, besides being a correct statement of the conclusions on diagnosis and treatment on which all authorities are agreed, is distinguished by a method of presenting the subject which reveals the author as having some originality of mind. Dr. Sym's book is an instance; it can be read, even by those who are familiar with the subject, with pleasure and profit. At the same time it is eminently practical from the point of view of the student. Omitting the usual introductory chapters on the anatomy and physiology of the eye for which the student must go elsewhere, and reducing optical formulæ and diagrams to the bare necessary minimum, Dr. Sym devotes his first chapter, on the general examination of the eye, to the varieties of pain of which patients complain, stressing the fact that in many of the most important affections of the eye no pain whatever is felt, and to the different ways in which sight may be impaired. Thus the student is made familiar from the outset with the four fundamental divisions of the sense of sight—light sense, form sense, colour vision, and binocular vision. Throughout the rest of the book the teaching follows traditional lines, being mostly confined to what a student, though not an advanced student, needs to know. In the chapter on iritis the term "rheumatic iritis" is retained, not because the author suggests that it is anything but very rare in association with acute rheumatism, but because it is not infrequently associated with chronic rheumatoid arthritis. His reference to those cases, where with true iritis there exists increased intra-ocular tension, is perhaps not very satisfactory, for the unqualified condemnation of atropine in these cases will not meet with universal assent among ophthalmic surgeons. The responsibility of treating these difficult cases should certainly be left to an expert where possible. We do not complain that in a book of this sort no reference should be made to the latest treatment for detachment of the retina, or to the latest theories of the intra-ocular circulation of fluid in connexion with the problems of glaucoma, but we deprecate the omission of any reference to arterio-sclerotic changes in the retinal vessels. The ability to detect these, though not easily acquired, is of very great importance in connexion with many problems which occur in general practice. We may add that the coloured illustrations are good.

A Treatise on Orthopædic Surgery.

Ninth edition. By Dr. ROYAL WHITMAN. London: Henry Kimpton. 1930. 45*s.*

THE fact that Dr. Royal Whitman's treatise on orthopædic surgery has passed through nine editions in the last 30 years is sufficient proof both of the excellence of the book and of the progress of orthopædic surgery. It now occupies 1085 pages and has 981 illustrations. The present edition has been thoroughly revised by the author, but the sifting process might have been more drastic, for much dead matter is included in the text, and the general surgeon or practitioner might well fall into some of the errors of his forefathers from lack of definite instructions. Thus, under the heading of operative treatment for calcaneus, Willett's operation of tendon shortening is still described, together with Willett's original directions (1880), whereas this operation has been universally abandoned. It is interesting historically, and should be inserted in a paragraph on the history of treatment; it would, if placed there, serve a further useful purpose in preventing its rediscovery. In the chapter on tuberculosis of the hip no mention is made of the method of extension by body-weight on an inclined plane, used at Carshalton and elsewhere, and the citation of percentages and causes of death from statistics culled from deaths between 1877 and 1884 is only of historic interest. What we want to know nowadays are the results of open-air treatment and a comparison with those of 60 years ago. The benefits from extra-articular arthrodesis are difficult to estimate in this country, and a fuller account would be welcome from an author working in the same city as Hibbs. Dr. Royal Whitman's own operation

of astragalectomy with backward displacement has many opponents both in England and America, and the inclusion of an account of late results by the author, illustrated by statistics, by post-mortem findings, and by radiography should help to prove its advantages. The chapter on fractures is incomplete, but we have a full description of the abduction treatment of fracture of the neck of the femur which will be associated always with the name of Royal Whitman. We hope in the next edition to find a note on the use of skeletal traction in orthopædic and traumatic surgery.

Traité de biocolloïdologie.

Tome I. *Pratique de Colloïdes.* Deuxième edition. Fasc. III: Mesures Capillaires et Electriques. By W. KOPACZEWSKI. Paris: Gauthier-Villars et Cie. 1930. Pp. 363–527. Fr.40.

M. Kopaczewski has embarked on an immense task. In a treatise of five volumes he proposes, to describe the colloidal phenomena occurring in biology and medicine, and to apply the principles of colloid chemistry to those sciences. The first volume, "Pratique des Colloïdes," is an enlarged and revised version of the author's "Théorie et pratique des colloïdes en biologie et en médecine," which was published in 1923. The first two parts of this volume were entitled "Propriétés mécaniques des colloïdes," and "Mesure des concentrations moléculaires et ioniques"; the fourth part, "Mesures optiques et données numériques," has yet to appear.

In the third part, which consists of chapters on viscosity, surface tension, electrophoresis, and dielectric constant, the value lies in the excellent summary of experimental methods and technique. Some of these methods are not to be found in any other textbook, and many, including several devised by the author himself, are of remarkable ingenuity and interest. The sources of inexactitude and the methods used to combat these are clearly and logically described. If one or two productive methods are neglected it is doubtless because the author has preferred to describe those of most use in biology. M. Kopaczewski has made a special study of "l'analyse capillaire," and has reached interesting conclusions on a little-known subject.

At the beginning of each chapter there is a brief summary of several aspects of our knowledge of the subject. At the end of each chapter the author has made a conscientious effort to summarise the results of the application of these experimental methods to biology and medicine. This is an original idea and perhaps the most interesting part of the book, but it is obvious that the attempt has severely taxed both the ingenuity and the wide knowledge of the author. The redemption of his promise to elaborate these results in the succeeding volumes will be awaited with interest.

The Picture of Paris.

By LOUIS SEBASTIEN MERCIER. Translated with an introduction by WILFRID and EMILIE JACKSON. London: George Routledge and Sons. 1930. With 12 illustrations. Pp. 256. 12*s.* 6*d.*

Prof. Mercier was born in 1740, at the beginning of Madame de Pompadour's reign over Louis XV.; he was just of age when "Émile" appeared; he grew up with the leaders of the revolution, and he died the year before the battle of Waterloo. Judging by the interesting biographical details contained in the introductory sketch by the translators he responded freely to the political and social changes amid which he spent his life. A solid claim can be put forward for him as a prophet of the revolution, he became editor of a Girondist journal, as a deputy he voted against the execution of the King, but he escaped the fate of most of the Girondist leaders and saved his head. He said of himself that a man who came as near the guillotine as he did might well fall out of love with revolution, and as a matter of fact he became a reactionary under the Republican régime, and died just as the career of Bonaparte was closing in disaster.

Mercier prophesied that his book, "The Picture of Paris"—he wrote much else of many kinds—would be found useful in 100 years to come, because his observations would make a bond with the coming century; but the developments of machinery and transport, the discoveries in biology and chemistry, and, lastly, the European war, have so far removed the Paris of the eighteenth century from the Paris of the twentieth century that no bond can be recognised. Read, however, as a lively description of Paris before and after the revolution, every page has its historical interest or its amusing reminiscence, while many lights are thrown on the medicine of the period as well as on the morals of society. It goes without saying that the experienced translators have done their work well; they have caught the spirit behind the book, and have appreciated the close and whimsical observation which has accompanied the putting together of a desultory commentary. The illustrations are well chosen and reproduced.

Paterson of Hebron: "The Hakim."

By W. EWING, M.C., D.D. London: James Clarke and Co., Ltd. 1930. Pp. 256. 8*s.* 6*d.*

THIS book will appeal to all interested in medical missions and to those members of the Egyptian Expeditionary Force who served in Palestine, many of whom knew Dr. Paterson. It is a tale of hard, and at times exciting, work as a mission doctor in one of the most fanatical strongholds of Mohammedism—work which did much to raise the prestige of Britain in that part of the Near East. It is evident from the story that Paterson gained the affections of a turbulent and hostile people by his personal courage no less than by his professional skill; a strong man appealed to them. Among the medical matters dealt with, the notes on syphilis may come as a surprise to those who do not know the East. Interesting and authoritative light is thrown on many of Palestine's post-war problems, political, racial, and social, and the book is worth reading from this aspect alone.

Stedman's Medical Dictionary.

Eleventh edition of "A Practical Medical Dictionary." By THOMAS LATHROP STEDMAN, A.M., M.D., Editor of the "Twentieth Century Practice of Medicine." London: Baillière, Tindall and Cox. 1930. Pp. 1222. 35*s.*

THE new edition of this dictionary contains evidence of the accelerated movement of medicine during the past two years. All medical dictionaries tend to become more encyclopædic as they grow older, and the eleventh edition of Stedman contains 22 plates, more than 200 tables, 400 figures in the text, an appendix of drugs with their doses and uses, and a list of microparasites pathogenic for man and certain animals with their morphological and cultural

distinctions. Yet the dictionary contains the individual characteristics with which Dr. Stedman has long made us familiar. One of his primary objects when he began his work in 1908 was the purification of medical orthography, and after two decades of patient efforts he feels that this end has been nearly attained. He was, for instance, always opposed to the dropping of the terminal "e" from alkaloidal titles, thus doing away with the convenient distinction between alkaloids and glucosides, and he has now had the pleasure of seeing American medical journals unostentatiously restoring the missing letter. Definitions of words recently introduced into the physics of radiology have been included in the dictionary in anticipation of their adoption into medicine. We have no doubt that Stedman's dictionary will long continue its useful career.

Surgical Diseases of the Thyroid Gland.

By E. M. EBERTS, M.D., Professor of Surgery, McGill University; R. R. FITZGERALD, M.D.; and P. G. SILVER, M.D. Philadelphia: Lea and Febiger. Pp. 238. $3.50.

THIS book in small compass presents the surgical aspect of the goitre question succinctly, accurately, and in an attractive and readable fashion. The account is founded upon the study of 700 patients who have passed through the goitre department of the Montreal General Hospital. It should be read by all surgeons interested in goitre.[1]

The Mystery and Lore of Monsters,

With Accounts of Some Giants, Dwarfs, and Prodigies.

By C. J. S. THOMPSON, M.B.E. London: Williams and Norgate, Ltd. 1930. Pp. 256. 15s.

IMAGINATION from the beginning of history has been inflamed by gruesome descriptions of monsters, human, semi-human, and utterly inhuman, whose existence on earth has been recorded. Throughout this long period the art of writing and, later, that of printing have inflamed wild beliefs in what purported to be accurate reports of the appearances and exploits of monsters, and the awe and credulity displayed by the intelligentzia at various epochs have never ceased to puzzle the intelligentzia of their successors. To-day there may be found an astonishing readiness among highly educated people to believe in the existence of creatures that are structurally impossible. So a book by the curator of the historical section of the Museum of the Royal College of Surgeons of England ought to make valuable reading for the public, while it may well supply for medical practitioners categorical answers to questions which their clients love to propound as to three-headed nightingales, super-athletic cripples, and frantic hybrids. The book ranges through the age of mythology—the satyrs, cyclops, and headless men; through the sixteenth century when some sinister results of included twins received particular notice; and so to the time when, in the first half of the eighteenth century, the systematic study of abnormal formations commenced with the work of Caspar Friedrich Wolff. Wolff classified roughly variations of growth distinguishing between the dicephalus, the pygopagus, and the craniopagus, and explained the anatomy and development of joined twins. The influence of classical and mediæval superstitions was not countered then, and has not ceased to play its part to-day, but on the whole our grandparents regarded as the mysterious whims of the Creator much that we now know to be manifestations of faulty physiology. A very interesting chapter deals with the celebrated examples of this phenomenon.

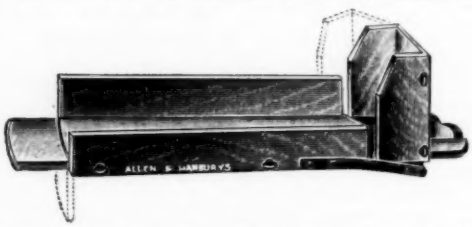
In the second part of the book the history of remarkable giants and dwarfs is fully set out and illustrated, and a large bibliography will enable the reader to pursue his studies along any line that appeals to his curiosity. As Sir D'Arcy Power says in an introductory note, this is a book which would have delighted the hearts of Samuel Pepys and Horace Walpole. It is true that the author's scientific accuracy goes far to explain away many picturesque stories, but his biographical notes will be found more interesting reading than ever were the mediæval legends with their patent incredibility. The book is very well illustrated, and in many libraries, scientific and otherwise, it should find a place as a work of reference.

[1] We regret that in a previous notice of this book one of the authors' names was misspelled.

NEW INVENTIONS

A NEW SPLINT.

THE illustration shows a new splint for Pott's fracture. It is a back splint, the lower end of which, with attached footpiece, is capable of being moved from side to side. The dislocation is reduced and the leg is put up on the splint, the footpiece being fixed in a direct line with the splint by means of a



nut on the under side. The side pieces are then fixed to the footpiece and the heel is secured in position by cotton-wool padding. The side pieces are strapped together over the ankle-joint, further locking the heel. The nut is then loosened and pressure, exerted on the outer side of the movable portion by means of a spring acting along the outer side of the splint, maintains the complete reduction of the ankle-joint. The movable portion can be detached completely from the splint so that, when desired, the foot and leg can be put up in plaster-of-Paris without taking the leg off the splint. The splint can be used for either leg as the spring will fit on either side. The legpiece can be lengthened or shortened as desired, and the footpiece can be adjusted backwards or forwards on the movable portion. Detachable side splints are fixed to the legpiece so as to anchor the leg firmly, thereby preventing twisting, and so making the pressure on the movable portion more effective. The nut securing the movable portion to the leg splint is made of wood so that clear X ray photographs can be obtained, both anteroposteriorly and laterally, when the foot is fixed in position.

Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, W., are the makers.

J. E. HEPPER, M.R.C.S., L.R.C.P. Lond.

THE LANCET.

LONDON: SATURDAY, DECEMBER 13, 1930.

BEIT FELLOWSHIPS.

THE death of Sir OTTO BEIT reminds us that the foundation of the fellowships for medical research which Sir OTTO established 20 years ago in memory of his elder brother was one of the conspicuous landmarks in the amazing progress which medical education and investigation have made in the twentieth century. Thirty years ago, if a young graduate wanted to devote himself to investigation in medicine or any of the medical sciences and keep himself alive, his path was by no means easy or assured. If he could get a teaching appointment his enthusiasm would probably make times and opportunities for research work, and many of the leaders of to-day could testify to the value of such an apprenticeship. But the number of teachers was limited and research scholarships for senior students were few and far between; there were the Grocers Company's scholarships in sanitary science, the John Lucas Walker studentship at Cambridge, the Radcliffe Travelling Fellowship at Oxford, and a few more plums which were eagerly sought after. All that is now changed; teaching posts are much more numerous and there are so many research scholarships in medicine and allied subjects that it is not always easy to find worthy recipients of all of them. The Beit benefaction marked the turn of the tide, and for the first time in this country the possibility of two or three or four years spent in research was open to more than a favoured or lucky few. The importance of this was two-fold. In the first place it gave a chance to the man with a clear faith and passion for investigation who had no money; somehow or other the best of these would generally survive and get what they wanted, but often enough by a very rough road which a Beit Fellowship made smooth and all the more productive. And in the second place the knowledge of the existence of such prizes has deflected the attention of many good men to the possibility of engaging in research, and a proportion of such have, on trial, found it to be their vocation. Looking back in recent years on the achievements and careers of those who have held his fellowships, Sir OTTO BEIT must have been very gratified at the results of his generosity. He had good cause. A few fellows have fallen by the wayside, a few have been choked with the cares of this life, but the majority have fruited well—professors, Fellows of the Royal Society, well-known investigators, a few clinicians. Under the loving care of Sir JAMES FOWLER—and who would not love a child with whose birth he had so much to do?—the trustees and their advisory committee have administered the foundation with singular success, adapting it wisely to the changing conditions which the Beit Fellowships themselves have done so much to alter. Research has now emerged as a profession, and there are senior fellowships with substantial emoluments for those who have proved worthy in the lower ranks. The intimate connexion between teaching and research is recognised by the fellows being allowed, even encouraged, to undertake a certain amount of undergraduate teaching in the schools in which they work—much to the benefit of all parties concerned. In one point only has the foundation failed—to get fellows of the right spirit who will work at real clinical medicine. And if anyone could tell them the solution of this troublesome problem, we are sure the trustees would do their best to adopt it.

RADIOLOGICAL DIAGNOSIS OF PLEURAL SYMPHYSIS.

IN the practice of artificial pneumothorax it is unfortunate that we have at our disposal no satisfactory preliminary method of determining whether the pleural space is free or limited by adhesions. The patient who has consented to this procedure and who is buoyed up by the hope that the method of treatment proposed will prove his salvation from lingering disease or early death will experience a severe disappointment if the induction fails. And though the disconcerted physician may with assumed cheerfulness refer to the event as one of minor importance and speak hopefully of "some other line of treatment" his assurances will seldom carry conviction. Thus, before an attempted induction of an artificial pneumothorax the patient should always be warned that success cannot be guaranteed. Physical signs or radiographic appearances may indeed provide arguments against the probability of a hopeful issue. In some cases a history of previous pleurisy may suggest that success is unlikely, in others preliminary radiograms may indicate the presence of fibrosis extending to and probably involving the pleura; or, without widespread pulmonary involvement, the parietal pleura may show evidence of thickening. But apart from experiment it is seldom possible to express a definite opinion as to the chances of success, and so long as the possibility of a fair measure of collapse remains the attempt should be made. For it sometimes happens that despite every indication of symphysis a free pleura will be found, and a lung which is apparently ensheathed in a thick and presumably universally adherent pleura will collapse uniformly at the first essay. Any evidence which throws a helpful light on the problem is thus of value and, despite the limited application of the tests proposed, a recent paper by E. SERGENT and J. VIBERT deserves attention.[1]

As these writers point out, a massive pulmonary fibrosis, whether due to tubercle, syphilis, widespread cancer of the lung, or

[1] Arch. Méd.-Chir. de l'Appareil Resp., 1930, v., 116.

pulmonary atelectasis and the partial collapse of the lung resulting from paralysis of the phrenic nerve, may, however produced, give similar appearances on the X ray film. Thus there will be opacity, often uniformly dense, involving the whole lung or one of its lobes on the affected side, displacement of the trachea and mediastinum, elevation of the diaphragm, and compensatory expansion of the opposite lung. In the differential diagnosis of the various conditions named it is necessary to distinguish between those in which there is a retractile sclerosis of the lung with involvement of the pleura and consequent symphysis of its layers and those in which there is no pulmonary fibrosis, no adherence of the pleura, for in the latter there is in many cases the prospect of a restoration of working capacity in the affected areas. In the examination of these cases it is important to note the static appearances as shown in radiograms, and to compare these with the moving pictures seen under the fluoroscopic screen.

In a typical case of retractile sclerosis and pleural symphysis the radiogram will show opacity of the lung fields, partial or total obliquity of the ribs, narrow intercostal spaces, the trachea drawn to the affected side and distorted in such way as to trace a sinuous course; in extreme cases even a well-marked S curve will be apparent. The diaphragm on the diseased side is elevated and its convexity is interrupted by small peaks or distorted by larger displacements. Examination under the fluoroscopic screen will show absolute or relative immobility of the affected side. If there is any movement it is of the slightest and tends to accentuate the diaphragmatic deformity, as the pleural adhesions responsible for the latter are dragged upon by attempted muscular contractions. On the healthy side the costal movements are exaggerated and the diaphragm gives strong "piston" thrusts. In atelectasis—whether due to a foreign body obstructing a bronchus, to stricture, malignant or innocent, or to post-operative causes—dullness of the affected lung and compensatory expansion of the healthy lung will also be seen. As in the previous group the mediastinum will be displaced towards the affected side and the diaphragm will be elevated, but certain striking differences are apparent. The diaphragmatic dome is smoothly rounded, there is no looping or tenting. Under the fluoroscopic screen, though diaphragmatic excursions may be limited, some movement is apparent. Further, the displaced trachea retains its normal direction, it remains straight, not sinuous. Obviously, if the atelectasis is the result of a foreign body or of a plug of mucus, complete restoration of the normal appearances will follow removal of the obstruction. When diaphragmatic elevation is due to paralysis of the phrenic nerve there can be no muscular contraction of the affected side, but in the absence of adhesions a see-saw movement may be observed under the screen, contraction and hence depression on the sound side being correlated with an upward movement on the diseased side. In this condition the intercostal muscles endeavour to compensate for diaphragmatic inertia by vigorous contractions.

THE PLAIN MAN AND THE EXPERT.

THE headmaster of Harrow has been praising medicine as an exact profession; for doctors, he says, base their diagnosis on a careful examination of all the factors in the case. This is pleasant hearing, of course, but scarcely true. Does any practitioner really give careful attention to all the factors affecting his patient? Certainly not: all he does is to note some of those outstanding in the light of his experience. If one of these cannot be neatly named, he calls in an expert to look at it more closely; but a complete examination of even one factor is never possible, because every factor is infinitely divisible until we reach the growing points of science. This inevitability of ignorance ought to be recognised for the good of the soul, but it is fortunately remote from the problems of everyday practice. Here a half-truth is much better than none at all, and everyone knows that patients ought to get much more benefit from the information already available. To justify Mr. NORWOOD'S description, the profession must make better use of its experts. As the tree of knowledge grows the practitioner more and more requires the helping hand of specialists who have climbed a little further up some particular branch. At the same time, with all this climbing, we must take care that nobody drops the patient.

Some of the dangers of specialism were well described by Dr. A. E. BARCLAY in his presidential address to the British Institute of Radiology last week, and printed on the first pages of this issue. He showed its bad effect on teaching and research and indicated the increasing difficulty of being anything more than a specialist within a specialty. But the problem of the expert and his uses is not confined to medicine alone; it is, indeed, an essential problem in government and most other branches of human endeavour. The time has come when ordinary people frankly admit their hopeless ignorance of gold standards and electricity, and most of the other fundamentals of civilised life, and there is a powerful tendency to let executive decisions rest with the men who understand these matters. The expert to-day, says Prof. HAROLD LASKI, is accustomed to a veneration not very different from that of the priest in primitive societies, for he exercises a mystery into which the uninitiated cannot enter. As professor of political science of the University of London, Mr. LASKI is chiefly concerned with this tendency as traceable in economic and social life, but his reflections in the December number of *Harper's Magazine* contain lessons which we may well apply to the work of our own profession. His main thesis is that the expert's opinion should never be final; decisions must ultimately rest with the amateur, "the plain man," who alone can give them coherence and proportion. For special knowledge and the highly trained mind produce their own limitations. The expert sacrifices the nicety of common sense to the intensity of his experience. He dislikes the appearance of novel views. He often fails to see his results in their proper perspective. He is apt to deny that truth can possibly be found outside

the borders of his own private caste, and is hostile to views not set out in terms he has been accustomed to handle. Specialism, says Prof. LASKI, seems to breed a horror of unwonted experiment and a weakness in achieving adaptability, both of which make the expert of dubious value when he is in supreme command of a situation. He tends to make his subject the measure of life instead of making life the measure of his subject, and the result is often a confusion of learning with wisdom. "The fixed person for the fixed duties (Prof. LASKI quotes Prof. WHITEHEAD), who in older societies was such a godsend, in the future will be a public danger." Prof. LASKI would argue that the more expert such fixed persons are, the more dangerous they are likely to be. The wisdom needed for the direction of affairs is not expert technique but a balanced equilibrium. It consists not in the possession of specialised knowledge but in power to utilise its results at the right moment and in the right direction.

The plain man, in medicine, is the general practitioner. The specialist may think him an unskilled amateur, and the practitioner may be fully aware of his limitations; but he retains executive command of his cases for much the same reason as inexpert Cabinet Ministers retain command of their departments. If this is right and wise—and that is a fair deduction from Prof. LASKI's words—let us frankly confess it and train men properly to undertake executive work and not something quite different. "A very broad basis of education," Dr. BARCLAY says truly, "is essential for critical appreciation of specialised knowledge," but the present plan of instruction is nothing so much as a scramble among teaching departments—the winner being allowed to inflict as much information as he can get into the time. Dr. BARCLAY is right in saying that the student could be just as adequately prepared for his life's work in a far shorter period, and he is right again in pointing the way to this end. *Eliminate all technique*, he says, except for those who intend to specialise. Reduce the student's burden by placing the common good before departmental interest. But, above all, he might have added, remember that nothing is to be gained by trying to turn the executive practitioner—the plain man—into an incompetent expert in every division of medicine.

WOUNDS AND MAGGOTS.

INDIVIDUAL surgeons learned much during the late war about the treatment of the infected wound; there was then enough material to test and evaluate different methods almost with laboratory exactitude. Such experience no longer falls to the lot of any one surgeon, although there must be a large total of heavily infected wounds scattered over the hospitals of the country. There may now be a certain danger that through lack of equipment or of imagination some of the lessons of the war may not be applied. Primary suture of gun-shot wounds, after excision of damaged tissue, was proved to be safe within a period of six to eight hours after receipt of injury, and the same holds good for motoring and other accidents, most of which receive attention within that period of time. In a number of cases primary suture fails or is impracticable and the result is an infected wound. Recently certain interesting views have been advanced concerning the treatment of such wounds, particularly when complicated with fracture of bones. Mr. A. J. WALTON has been led to regard[1] extensive surgical procedures for the treatment of sepsis as wrong; it is now, he says, his custom to wait until the sepsis becomes localised and then to deal with the focus. Dr. H. W. ORR, of Nebraska, advocates[3] treating compound fractures in a plaster cast, to insure absolute rest to the injured limb, the wound being dressed with vaseline gauze which is allowed to remain undisturbed. Dr. LORENZ BÖHLER, drawing on his experience at an accident hospital in Vienna, while agreeing in the prime importance of absolute and continued rest, prefers to leave the wound exposed to the air with formation of a protective scab to form.

Neither of these methods, however, successful as each undoubtedly may be, constituted a quick way of converting a septic wound into a clean granulating one in which secondary suture, if required, can be performed. Of the methods which have been devised to achieve this result the best known is that of Carrel and Dakin; but Dakin's solution probably achieves its results by virtue of its proteolytic power, owing to which the wound is freed of all dead tissue and therefore of microbes. Mr. E. G SLESINGER pointed out again at a recent discussion[2] that in Nature a similar result is achieved by the growth of fly maggots in an infected wound. During the war it was a common observation that the men who had lain for many hours or days in front of the lines, and whose wounds were heavily infected with maggots, often did surprisingly well. Maggots deliberately planted into a wound, provided they are kept from encroaching on the skin by a wire gauze cage fixed with plasticine, will clear an infected wound of dead tissue within four or five days. At the end of that time, if the maggots are demobilised by chloroform vapour and gently scraped away, a wound is left covered with small healthy granulations, beneath a layer of mucoid slime which can be picked off the surface with forceps. Whatever æsthetic objections may be felt to such a treatment, it is found in practice that the maggots can be introduced without the knowledge of the patient, and provided they are kept from the skin surface he is not conscious of their presence. This artificial myiasis does, in fact, offer a method equivalent to surgical débridement but applicable to the heavily infected wound, and capable of cleaning a complicated area which could not be dealt with by surgical means. Dr. W. S. BAER, of Johns Hopkins, has used the method in the treatment of osteomyelitis, septic sinuses, and such conditions with satisfactory results for over two years, and it would seem that, as an adjunct to the treatment of septic wounds, maggots are worthy of the serious attention of surgeons.

[1] THE LANCET, Nov. 15th, p. 1073. [2] Ibid., Dec. 6th, p. 1238.
[3] Jour. Bone and Joint Surg., 1928, x., 605.

ANNOTATIONS

THE COMMISSION ON NURSING.

THE first meeting of the members of the Commission was held on Monday last in the Office of THE LANCET, when Lord Crawford presided over a full attendance. The terms of reference were explained and the first directions of the work, as defined by those terms, were settled. The favourable reception of the inquiry by the general and medical press was reported, and the attention of the meeting was drawn to certain of the many communications which had been received. It was announced that the inquiry would be pursued in all representative centres, and it is hoped to secure coöperation and to collect information on the various problems involved.

Any organisation or individual wishing to provide evidence for the Commission to consider, or to make proposals relating to the improvement of conditions of service of the nursing profession, is asked to communicate with the hon. secretary at THE LANCET Offices, 7, Adam-street, Adelphi, London, W.C.

INTRACRANIAL INJURY DURING BIRTH.

A RECENT meeting of the Massachusetts Medical Society[1] was devoted to the effect on the nervous system of injury during birth. As an obstetrician Dr. F. C. Irving frankly resented the common assumption that intracranial hæmorrhage is due to bad obstetrics. The cardinal sign of intracranial hæmorrhage, he says, is disturbance of respiration, the later signs being apathy, refusal to suck, pallor, and a tense fontanelle. At the Boston Lying-in Hospital of 182 autopsies from all causes, 73 (40 per cent.) revealed intracranial hæmorrhage as the cause of death. In 23 of these cases labour had been normal; 23 were delivered by the breech, 21 with forceps, and 3 by Cæsarean section. These figures suggest that no particular obstetric procedure is especially responsible. Dr. Irving maintains that asphyxia is a true cause of hæmorrhage, even in the absence of trauma, and infants showing signs of intra-uterine asphyxia can sometimes be saved, he believes, by Cæsarean section.

Dr. Donald Munro gave further details of his series of 117 cases of cranial and intracranial injuries (THE LANCET, 1929, i., 31). In no less than 54 of these the infants were first-born. Cerebral œdema without macroscopic hæmorrhage was a common and significant finding, and microscopic examination usually showed some associated intracortical hæmorrhage. On further analysis of his series Dr. Munro finds that the most frequent symptoms were hypertonicity, abnormal or poor cry, cyanosis, and failure to nurse; tense fontanelle was slightly less common. Hypertonicity was relatively frequent in the cases which survived, and cyanosis in those which died. Less common symptoms, which were associated with high mortality, were flaccidity and pallor, often with apathy and failure to suck; in these cases the pressure of the cerebro-spinal fluid was below normal. These symptoms are indicative of surgical shock, and occur typically with gross meningeal damage. In the absence of surgical shock all cases with cerebral œdema or hæmorrhage showed increased intracranial pressure. Dr. Munro recommends no active treatment during the stage of surgical shock, except possibly rectal magnesium sulphate. When surgical shock is absent, the rise of intracranial pressure should be combated by repeated lumbar puncture, unless there is evidence of hæmorrhagic disease, in which case the bleeding and clotting times should first be brought to normal.

Dr. Randolph Byers recognises two types of nervous lesions in infants: (1) due to strain on supporting structures with rupture of the vessels which they contain, as described by Eardley Holland; and (2) small intracerebral hæmorrhages as described by P. Schwartz. Both types are common. His series of 12 cases illustrating the variety of situations of birth trauma deserves detailed study. Some of them lend confirmation to the work of Crothers and Putnam on spinal trauma in breech deliveries; in one case he is able to demonstrate the morbid anatomy of this condition in a child which died of intercurrent disease in the fourth month. In most of his cases of intracranial hæmorrhage the bleeding was considered to be mainly intracerebral, especial attention being paid to cases of this kind in which hyperkinesis subsequently developed, and in which it is suggested that the lesions involved the basal ganglia. Dr. Byers is in general inclined to attribute the pathogenesis of cerebral lesions met with in childhood to natal rather than prenatal causes.

A paper by Dr. G. B. Fleming and Dr. Ellen Morton,[2] of the Royal Maternity Hospital, Glasgow, can usefully be compared with those read at the Massachusetts Medical Society. They take the view that the clinical signs of cranial hæmorrhage are unconvincing, and that the most reliable evidence during life is obtained from the presence of a xanthochromatic spinal fluid. They think, however, that *intracerebral* hæmorrhage is rare, and they infer from the presence of xanthochromatic fluid that the hæmorrhage is meningeal—an assumption hardly supported by sufficient evidence. An account is given of 103 infants suffering from intracranial hæmorrhage, of whom 50 died before discharge and 7 subsequently. The duration of labour showed no significant relation to the mortality, but labour was abnormal in 50 per cent. of the cases, as against 27 per cent. of all women delivered in the hospital. In the fatal cases tentorial tears were the commonest lesions, being found in 16 out of 39 autopsies. Of the non-fatal cases 33 were examined after they had passed the first year, and only 5 of these were suffering from any defect.

INTESTINAL FLORA.

THE bacteriology of the more accessible parts of the alimentary canal has long been studied and recently intubation has made it possible to take cultures from the gastric and duodenal fasting contents. But, apart from operation and autopsy, the nature of the flora lower down has only been deduced from examination of the fæces, and in clinical work this has many fallacies. Certain bacteria, such as those of the typhoid group, are known to cause disease; but of the hosts of other inhabitants of the intestinal tract it is hard to say which are real parasites and which are of no pathogenic significance. Moreover, owing to drying in the colon many bacteria are dead before the fæces are voided. The Einhorn method of intubation which was introduced for therapeutic purposes offers new means of taking

[1] New Eng. Jour. Med., Sept. 11th, p. 499.

[2] Arch. Dis. in Childhood, October, 1930, p. 361.

samples of intestinal flora at various levels. The perforated end of the fine rubber tube swallowed by the patient is sealed in collodion sacs so that no fluid can enter until the end is in the situation required, as determined by the length of tube paid out, controlled by X rays to preclude the tube being coiled on itself. The collodion sac is burst by blowing a little sterile salt solution through the tube, and a sample of intestinal contents is sucked in. The tube may now be washed through with iodine and sterile salt solution and withdrawn to a higher position in the alimentary canal where a further sample is obtained. In an investigation just recorded[1] patients with high gastric acidity were found to have low duodenal bacterial counts, whereas in those with low acidity duodenal counts were high. A series of arthritic cases showed in the main a fermentative flora with *Streptococcus viridans* present in all parts. The patients with enteritis and cholecystitis had a putrefactive intestinal flora. The bacteria in the throat, stomach, duodenum, and intestine varied greatly in the same patient.

POST-OPERATIVE PLASTIC SURGERY.

AT a meeting of the Section of Laryngology of the Royal Society of Medicine on Dec. 5th, Mr. E. Musgrave Woodman made a communication on plastic repair after operations on the upper jaw. In planning the original operation, he said, there are certain points which tend to prevent or minimise deformity, and it is an advantage when the surgeon who performs the first operation is also able to undertake any plastic procedures which may be required later. The old transverse incision below the eyelid must be relinquished, for it is often followed by unsightly baggy swelling of the lid; Trotter's incision through the inferior fornix of the eye may be used, but Mr. Woodman prefers to begin his incision in the eyebrow and extend it down the side of the nose. To prevent dropping of the eye-ball, the infra-orbital margin of bone should be retained if possible; failing this, the suspensory ligament should be left. Perforation of the palate is not regarded as a deformity; on the contrary, such an opening should be left in every case for proper inspection of the operation area. This opening is controlled by a denture, held in position by two soft rubber processes which project into the aperture. Indeed, skilled dental assistance is of great value; a temporary plate can be made and fitted a few hours after operation, keeping the dressings in the cavity clean and enabling the patient to eat and swallow easily. A stent attached to the plate can be used to fill out the hollow left by removal of bone; and when a large hole in the face remains, unsuitable for repair by plastic operation, a vulcanite shield can be attached to the plate to fill the gap and painted to match the skin of the face. Mr. Woodman illustrated his paper by photographs showing methods of repair by means of forehead flaps and of tube-grafts taken from the chest. In a second communication Mr. Lionel Colledge dealt with the repair of pharyngeal defects after operation for removal of malignant tumour. Such openings usually occur as a complication after total laryngectomy and lateral pharyngotomy; they may be accidental, the result of wound-infection, or they may be produced deliberately, when so much of the pharyngeal wall has been excised that it cannot be closed securely, and is advised when X rays have been used on the pharynx. In closing these pharyngostomes it is useless to slide a single flap across the opening, having an inner raw surface exposed to contamination; the gap should be closed by a double layer of tissue which presents a lining of skin or mucous membrane facing inwards and of skin facing outwards. Skin flaps are dissected up and turned inwards to reconstruct the tube; this leaves a large raw surface which is covered by a flap taken from the loose skin below the horizontal ramus of the lower jaw and rotated into position. Four patients were shown to illustrate Mr. Colledge's paper.

In the discussion of these papers the opinion was expressed that recent advances in plastic surgery permitted operation on more extensive tumours than formerly, with the prospect of leaving the patients in a tolerable condition. The growth of hair upon the inturned skin flaps was inclined to be troublesome in the nose and mouth as well as in the pharynx; X rays were not considered reliable in preventing this, and in a recent case Mr. Colledge had had all the hair follicles epilated by diathermy before the plastic operation.

THE WIDAL TEST AGAIN.

THE exaggerated claims sometimes made for this test and the sweeping condemnations to which it is also subject have prompted Major J. A. Manifold, R.A.M.C., to estimate its value in more accurate terms.[1] In his attack upon the subject from the point of view of diagnosis of the enteric group and differential diagnosis of the paratyphoids, Dr. Manifold has a wealth of accurate data to draw upon. His first favourable circumstance lies in the existence of an ideal experimental animal—the soldier, white or native, of the Indian army who willingly reports sick within the first week of disease and thereafter submits to as many tests as are required to establish bacteriological and serological diagnosis. The results thus gathered are comparable owing to the second favourable factor which is the uniform standardised technique used in the army laboratories in India. Prof. Dreyer's methods are followed by workers all similarly trained, and so the conditions for optimum results are fulfilled. Dr. Manifold was able to analyse 227 bacteriologically proven cases of enteric fever, of which 152 were due to *B. typhosus*. When on an average 4·39 tests per case had been done 64 per cent. of these would have been diagnosed and classified on their serum tests alone. If the group is subdivided, of 84 severe cases, 75 per cent. could have been diagnosed, of 68 mild cases 50 per cent., and of 24 very mild ones only 37·5 per cent. would have been detected. As an instance of these mild infections Dr. Manifold mentions patients who have been admitted to hospital for an unknown pyrexia, a blood culture made, the patient discharged as well, and readmitted a few days later when results of the culture became known. It is interesting to compare the figure for the whole group 64 per cent. with A. Pijper's 60 per cent. in bacteriologically proven cases. The former is the result of 4·39 tests per case, the latter the finding at the first examination and of course points only to enteric group. The number of complete failures is about the same. Dr. Manifold reaches the conclusions that no serological test can replace careful, repeated bacteriological examinations; that in average severe cases, the Widal, practised with Dreyer's cultures and manipulations, remains a valuable aid to differential diagnosis; and

[1] Thomson, A. E., Einhorn, M., and Coleman, W.: Med. Jour. and Record, Nov. 5th, p. 417.

[1] Jour. R.A.M.C., June–August, 1930.

that the chief field of usefulness for Felix "O" suspension may lie in the detection of mild and abortive cases if experience proves it to be a sensitive indicator in this particular group. Concerning the fluctuation of group agglutinins he dissents from accepted teaching on the subject. With these conclusions all will agree but the civilian practitioner will no doubt protest, as Dr. Manifold has anticipated, that his patient will not only refuse to put up with four or five vein punctures during 30 days of disease, but also he can seldom afford it. Felix's improvement on the test which claims greater certainty in achieving all objects by even one examination than does the old method in five, deserves to be tested as completely, and one hopes that Dr. Manifold will direct that this be done in his vast laboratory.

VACCINE TREATMENT OF WHOOPING-COUGH.

THE high mortality from whooping-cough reported in many parts of Western Europe, especially during the last few years, has stimulated search for remedies. Among those recommended are injection of ether, exposure to ultra-violet light or to X rays, and a great variety of drugs, of which luminal appears to be the latest. At the same time interest has revived in the possibility of vaccine treatment. In introducing this subject Dr. Philipp Leitner[1] points out that early diagnosis is essential whatever the treatment employed. He lays it down as a principle that when a child with a cough, free from fever, without catarrhal symptoms or evidence of inflammation (such as otitis, furunculosis, or pyuria), and with no enlargement of liver and spleen (such as would suggest, for example, leukæmia or malaria), has a leucocyte count of over 12,000 per c.mm., then that child has whooping-cough. The diagnosis is strengthened if the white cell count is still higher on being repeated after two to three days. This method of diagnosis, according to Leitner, helps to exclude enlarged bronchial glands and spasmophilia as the cause of a spasmodic cough. His own experiences with the use of vaccine in treatment are limited to 20 cases, but these he studied in some detail. He employed a highly concentrated vaccine specially prepared from Bordet-Gengou bacilli grown on blood-agar and killed with carbolic acid. This vaccine was supplied in phials containing 3, 4, 6, and 8 thousand million organisms per c.cm. and was usually given in six doses at two to three day intervals, each of the first four doses being 1 c.cm. of the strengths mentioned and the last two obtained by combining the solutions supplied to give 9 and 12 thousand million organisms respectively. After the first two injections the number of coughing attacks was considerably lessened and individual attacks were shorter in duration and less severe. Local reactions were never seen after the early smaller subcutaneous injections, and even after the later larger injections, which were given intramuscularly, no serious troubles were experienced except in one case where a slight inflammatory infiltration occurred at the site of injection together with a generalised eruption of roseolar type. In this case, however, as in all the others, favourable results were obtained. Even in quite small infants not only were the large doses of vaccine well borne but the usual period of duration of whooping-cough was curtailed. This was obvious after four injections, but in three older children after four doses of vaccine there was a slight relapse which was promptly cut short by the usual fifth and sixth dose. Other auxiliary methods of treatment may be combined with the vaccine in these cases, but in Leitner's opinion the short duration of the disease, 10 to 14 days, under the influence of the concentrated vaccine makes drugs unnecessary, although in several cases he gave luminal during the night. Four cases in which the treatment was not begun until the disease was well established were benefited by the vaccine, but the illness was not noticeably shortened.

[1] Jahrb. f. Kinderh., November, 1930, p. 343.

DOUBTFUL GROWTHS OF THE BLADDER.

MALIGNANT growths of the bladder have always presented many difficulties to the surgeon, and their proper treatment is still uncertain. This was evident in the discussion on the presidential address with which Mr. Sydney Macdonald opened the present session of the Section of Urology of the Royal Society of Medicine.[1] His title was Results of Partial Resection of the Bladder for Carcinoma, but he found occasion to consider the treatment of other growths as well. Incidentally, he pointed out that their scientific classification is by no means easy, since many which clinically seem innocent are shown by microscopic section to be malignant, and vice versa. He himself, as a working rule, divides growths roughly into three groups: those probably benign, those certainly malignant, and those doubtful. Of all methods of treatment he prefers resection, and he uses diathermy only for growths appearing innocent and small in size. Speaking of those which are certainly malignant he said that he had notes of 120 cases, of which only 35 were operable when they first came for examination. The large number of inoperable cases was very striking, and since most of the records came from his private practice and did not include cases seen in his out-patients' department, the percentage of inoperable cases was even higher than these figures indicated. Among 44 patients who submitted to partial resection of the bladder, and of whom nine could not be traced, six died in the nursing home or hospital as the result of the operation. Of those who survived operation, 15 died within the next three years, leaving 14 alive and well after that period, or 31·8 per cent. of those operated on. Mr. Macdonald concluded his address by inviting opinion about the best method of treatment of growths of doubtful nature, and the speakers who followed were divided into two groups—those who considered that diathermy was a useful alternative to resection in the treatment of growths not obviously malignant, and those who insisted on excision. Mr. Ralph Thomson was strongly inclined to extirpation with the knife. Although he did not go so far as to say that diathermy may not be useful, he thought that three-quarters of the surgeons who use diathermy are not expert bladder operators. One of the chief disadvantages of diathermy treatment was that a vast amount of tolerance on the part of the patient is required for success. Mr. Jocelyn Swan agreed that diathermy should only be used for small and unmistakable papillomata. Mr. Zachary Cope and Mr. F. M. Loughnane, however, were both disposed to think that the scope of diathermy is greater than previous speakers indicated, and Mr. E. W. Riches quoted two cases of inoperable growth in which palliative treatment by diathermy was followed by comparatively good results. In reading the report of discussion, it is interesting to note that treatment by deep X rays and by radium received little notice. Mr. Macdonald recommended X ray therapy as a prophylactic measure

[1] Proc. Roy. Soc. Med., 1930.

after the excision of a malignant growth, and Mr. Zachary Cope quoted a case of malignant bladder improved by diathermy followed by insertion of radium. It must be borne in mind, however, that the discussion was primarily one on resection of the bladder and on the treatment of growths of doubtful nature. Had carcinoma been under consideration it is probable that more would have been said of ray therapy.

FOG PANIC ON THE MEUSE.

LAST week the first cold snap of winter brought with it the customary blanket of fog over the North Sea and neighbouring coast lands. Sea passages were slow and dangerous, communications were held up, and the depressing effect on the lives of aging persons will soon be manifest in the weekly returns. But something more than this occurred in the valley of the Meuse above Liége. At Engis and several other villages on the river level a number of deaths occurred among men and animals which were so grouped and so rapid as to give rise to something of a panic. Other agencies than those of fog and cold were brought in to explain the 64 deaths within so small an area. There was talk of poisonous fumes from local factories kept down by the fog bank, and of some deadly local epidemic; even wilder thoughts were current in the villages. Local anxiety was such that the inhabitants barricaded themselves and their domestic animals into their houses. When the fog lifted saner counsels prevailed, and a local inquiry at Engis last Sunday came to the conclusion that fog alone was sufficient cause of the deaths and that noxious gases were in no way connected with the occurrence. Our own Ministry of Health has received an assurance from the Belgian health authorities that the deaths were not due to any communicable disease. Inquiry is still proceeding, but it has been ascertained that the victims for the most part were old or feeble, and that, of the five deaths in one commune, two were suffering from heart disease, one from tuberculosis, one from asthma, and the fifth from obesity. Post-mortem examination of cattle has shown pulmonary œdema and nothing more.

Without anticipating the findings of the Commission of Inquiry, it may be recalled that the Meuse valley at that point is deep and sheltered, and that cold air settles in the bottom of such a valley, producing conditions of rigour which are known little or not at all in wider valleys such as those of Thames and Clyde. In this country there is scant evidence that fog itself has appreciable effect on the respiratory death-rate, but if the fog is associated with a low temperature the effect on the adult death-rate makes itself evident at once. The bad February of 1880, when hoar-frost, low temperature, and fog figured in the Greenwich records, witnessed a sharp rise in the death-rate in the St. Pancras and Islington area. The factors are discriminated in a careful analysis of the figures for the two London boroughs over a period of 27 years made by Mr. W. T. Russell at the National Institute for Medical Research and published in our columns.[1] Of the two factors of cold and fogginess, the former was definitely shown to exercise the greater influence. Knowing the temperature and the amount of fog Mr. Russell was able to predict (within a marginal error of 30 per cent. or so) the mortality from respiratory disease for the succeeding week. The late Dr. J. B. Russell, health officer for Glasgow, used to maintain that during the winter every city is in danger of a catastrophe if a combination of frost, fog, and still air occurs for days together. It seems that these conditions united on the Meuse to produce so terrifying a situation last week.

[1] THE LANCET, 1924. ii., 335; and 1928, i., 539.

MEDICAL USES OF RADIUM.

THE summary of results of research on radium during 1929[1] continues the series published annually by the Medical Research Council, and is arranged more conveniently than its predecessors. It gives a rather full account of the treatment of œsophageal and rectal growths, about which there is as yet no general agreement. The methods of radium application for cancer of the cervix, breast, and tongue are by now almost standardised, the techniques of the various schools differing only in details such as quantity and time. Growths in the œsophagus and rectum, however, are difficult of access, highly resistant to radium, often complicated by bacterial infection, while damage to the surrounding tissues may be a serious feature in irradiation treatment. There is now general agreement that cases of idiosyncrasy to radium are encountered from time to time, but another question that has often been asked still meets with no definite reply: "Can radium ever stimulate malignant tissue to more active growth?" In one of the cases of mammary carcinoma reported by the Middlesex Hospital it is suggested that the progress of the disease was accelerated by the treatment. The woman's history is given in full, with two microphotographs. It is impossible to say whether the evil effect was due to the opening up of fresh channels by the needles or to the action of the rays, either on the malignant cells themselves or on the surrounding tissues of the host. The answer to this question is obviously one of the very first importance for radium therapy.

The techniques under trial for œsophageal carcinoma at the Middlesex Hospital are as follows. For four cases of post-cricoid growth the radium was inserted on or in the prevertebral muscles and against the side of the gullet in eight or ten 2·2 cm. needles each containing 0·5 mg. of radium element. They were left in for a week or ten days. Twelve cases were treated by intra-œsophageal application, either with a special silver radon applicator like a Souttar's tube or else by means of Muir's seeds on a Souttar's tube. Four more cases were treated by thoracotomy, radon seeds being inserted sub-pleurally after collapse of the lung. At St. Bartholomew's Hospital some progress has been achieved by exposing the lumen to needles applied on a Symond's tube. The opinion at Birmingham is that the external approach is only favourable when the growth is either in the neck or the lower part of the thorax. The operation is risky, in contrast to the intra-œsophageal approach, which has shown no immediate mortality.

For the rectum St. Bartholomew's Hospital prefers radium needles; in very advanced cases relief has been obtained by radon seeds inserted through the peritoneum, the anus, or the peri-anal skin, sometimes combined with posterior barrage. The Middlesex Hospital reports partial success with buried radium, without any operation. St. Mark's Hospital comments on the contrast between the satisfactory results of radium treatment of squamous

[1] Special Report Series No. 150. London: H.M. Stationery Office, Kingsway, W.C.2. Pp. 32. 9*d*.

carcinoma and the variable response of columnar-celled tumours. The Birmingham report stresses the value of colostomy, both for its therapeutic effect and for the possibility it affords of recognising hepatic metastases. Irradiation has been given chiefly by perineal puncture and needles, but the coccyx has also been removed to expose high growths.

A SURVEY OF PSITTACOSIS.

THE collection into one official handbook[1] of the results of recent research on psittacosis, much of which was originally recorded in our columns, will be a convenience to future workers. The history, clinical aspects, and pathology of the disease have been dealt with by Dr. S. Levy Simpson. Experimental observation on the ætiology are described by Dr. S. P. Bedson and Dr. G. T. Western, while Dr. Mervyn Gordon gives an account of virus studies in relation to psittacosis. Dr. G. L. Sturdee and Dr. W. M. Scott, medical officers of the Ministry of Health, have woven the whole into a connected story, contributing an introduction giving a brief account of the events leading to the present interest in psittacosis, and a considered review of the epidemiology as at present ascertained. The administrative action taken in this and other countries to control or prohibit the importation of birds of the group known as psittaciformes is also set out, while appendices include statistical tables, full notes on typical cases, and suggestions for the transport and keeping of birds. The fact seems to be established that the causal agent of psittacosis is a filtrable virus, associated constantly with the presence of a minute cocco-bacillary body. The possibility of producing an active immunity by means of a formolised vaccine is being considered, the one experiment on these lines which has so far been carried out having given encouraging results.

THE NEW MERCURIAL DIURETICS.

THE value of Novasurol and Salyrgan was discussed at a meeting of the Section of Therapeutics of the Royal Society of Medicine on Dec. 9th, when Dr. Philip Hamill presided. Dr. Evan Bedford and Prof. F. R. Fraser were able to testify to the efficacy of novasurol as a diuretic, but Dr. Strickland Goodall thought that the reduction of œdema after its use is due to loss of fluid by way of the alimentary canal. Often, he said, this drug produces a severe toxic diarrhœa, and he handed round two specimens showing sections of gut in which the mucous membrane was inflamed and sloughing as a result of the exhibition of novasurol. Dr. Bedford, however, was able to give a reassuring account of salyrgan, which he had first begun to use 18 months ago, and which he regarded as considerably less toxic than novasurol. His method is to give 2 c.cm. of the 10 per cent. solution diluted with 10 c.cm. of sterile saline, by intravenous injection; in this dilution he has never seen thrombosis of the vein following the introduction of the drug. In his opinion, it is unnecessary to stop digitalisation while salyrgan is being given, and he always accompanies the treatment with grs. 15 of ammonium chloride given by mouth three times daily to aid the diuretic action. Fluids should be restricted to daily intake of ℥xx. to ℥xxx. Using this technique, among 27 cases of cardiac failure with œdema he has only had three failures, and the three patients in question were moribund at the beginning of treatment. He quoted several of his cases in which the diuresis following salyrgan was marked; some of them lost 40 lb. or more in weight in a month. So far, he said, no toxic effects have been observed, but he thinks the chief value of the remedy is in cases of cardiac œdema. Though it is supposed to act by diminishing the affinity of the tissue colloids for water and sodium chloride, there is some evidence that salyrgan also has a direct action on the kidney, and for that reason its use is less desirable in œdema due to nephritis. While none of the other speakers could produce quite such dramatic results as Dr. Bedford, several were able to quote cases where salyrgan had promoted diuresis and reduced the œdema in cardiac cases. Dr. D. H. Kotthoff, of Vienna, stated that many good results had followed its use among cardiac cases in Austria. It was agreed by the majority that both novasurol and salyrgan should be avoided in œdema of renal origin; but Dr. Izod Bennett held that, although they are dangerous where the kidney is seriously injured, in cases which show gross pitting œdema with a normal blood pressure and blood-urea, salyrgan may be useful and is probably safe. Dr. Kotthoff shared this view. The use of salyrgan in the diagnosis of Ménière's disease was mentioned by Sir James Dundas-Grant and Dr. Warren Crowe; there is some evidence, Dr. Crowe said, that people with Ménière's disease have a mild degree of water retention, and that they react differently from normal persons on being given water and salyrgan together. The ultimate value of treatment by novasurol and salyrgan was discussed pessimistically by Prof. Fraser, who considered that those patients with heart failure serious enough to merit the treatment were so much wrecked in health as to profit little by the disappearance of œdema. Dr. Bedford, while sympathising to some extent with Dr. Fraser's view, pointed out that the patients themselves place a high value on their increased comfort, even to the extent of attending regularly at the out-patient department for a weekly injection of salyrgan.

[1] Reports on Public Health and Medical Subjects. Ministry of Health. No. 61. 1930. London: H.M. Stationery Office. Pp. 132. 2s. 6d.

POOR-LAW ACCOMMODATION IN BUCKS.—It is officially stated that no accommodation exists in any of the poor-law institutions in Buckinghamshire for cases requiring surgical treatment. Arrangements for the treatment of such cases have, therefore, been made with the Northampton General Hospital, the Royal Bucks Hospital, Aylesbury, and the King Edward VII. Hospital, Windsor. The charge for poor-law in-patients will be 10s. 6d. per day per patient; poor-law out-patients will be treated at a charge of 15s. per head for each course of treatment not exceeding 12 months.

CONSOLIDATION OF PUBLIC HEALTH LEGISLATION.—In pursuance of the policy of consolidating the various statutes regulating the work of the Ministry of Health, a committee has been appointed with the following terms of reference: "With a view to the consolidation of the enactments applying to England and Wales (exclusive of London) and dealing with (*a*) local authorities and local government, and (*b*) matters relating to the public health, to consider under what heads these enactments should be grouped in consolidating legislation, and what amendments of the existing law are desirable for facilitating consolidation and securing simplicity, uniformity, and conciseness." The chairman of the committee is Lord Chelmsford, and its other members: Mr. L. S. Brass, Mr. H. J. Comyns, Capt. Ernest Evans, M.P., Sir William M. Graham-Harrison, K.C., Sir Frederick F. Liddell, K.C., Major J. J. Llewellin, M.P., Mr. E. J. Maude, Major J. Milner, M.P., Mr. Cecil Oakes, LL.M., Sir Harry G. Pritchard, Mr. L. A. J. Granville Ram, Mr. C. E. Staddon, Lieut.-Colonel Sir Seymour Williams, and Mr. R. S. King-Farlow, of the Ministry of Health, as secretary.

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXVIII.—BACTERIOLOGICAL EXAMINATION OF WATER.

PART I.*—Objects of the Examination.

THE main object of the bacteriological examination of water is to determine whether it has been subjected to fæcal contamination, and, whether in consequence, there has been distribution to the area of supply of various disease-producing organisms, such as those of enteric fevers (typhoid, paratyphoid), dysentery, and cholera. There is, however, another factor which is of some importance. Bacteria flourish best in water which contains organic impurities, and therefore a bacterial count may give important indications as to the amount of these impurities. If this amount is considerable, the water becomes a more favourable medium for bacterial growth and if, by chance, water in this condition becomes contaminated with fæcal organisms, and particularly with disease-producing ones, their growth will be more active and their multiplication considerable; whereas if the content of the water in organic impurities is low, or, in other words, the bacterial content low, the chances of these disease-producing organisms multiplying will be considerably lessened, and the risk of infection correspondingly lowered. Systematic examination of the water helps considerably in dealing with any defects, and thus keeping the water at what we might call "the minimum point of risk"—i.e., in such a condition that the disease-producing bacteria, if they gain access, have little chance of surviving, or, at any rate, of multiplying.

The available food-supply—i.e., the amount of organic matter—is, therefore, of considerable importance. The more food, the greater the number of organisms in the water. Those which develop at 20° C. —on the gelatin plate—are mostly non-pathogenic to human beings, but they cannot be ignored, for they indicate the amount of food material available for the pathogenic bacteria, and the amount of extraneous matter which has gained access to the water. This bacterial count will be greater during the dusty months of the year and after heavy rainfall, and, in consequence, too much importance must not be attached to it. Temperature, light, acidity, all play a part. But the available food-supply is not the only factor. The effect of temperature varies with the amount of organic matter present. A rise of temperature favours bacterial growth and this is especially the case if the water contains an ample food-supply. On the other hand, when organic matter is small in quantity the rise of temperature actually causes a diminution in the number of organisms. The regular knowledge, therefore, of the total bacterial count of a water-supply is a very important indication to the water engineer or the medical officer, not merely as to the immediate purity of the supply, but as to the capability of the water to deal with a chance contamination with disease-producing organisms. Epidemic disease from a water-supply is, it is true, a rare occurrence, but this does not prove that contamination with disease-producing bacteria is also uncommon. It may be that these organisms occur more commonly than we think, but if the water-supply is a really satisfactory one, then their death or their difficulty in multiplying may save us from an epidemic. For this reason it seems very desirable that we should know quite regularly the capacity of the water to allow the reproduction of bacterial life.

Epidemic disease due to a water-supply is, as has been said, a rare occurrence, but it is very common in any city to find isolated cases of one or other of the forms of enteric fever for which no cause of infection can be traced—cases of paratyphoid fever, &c. Not infrequently these occur over one special area and we look for the cause in the so-called "carriers" or the milk-supply. At other times the condition is more widespread, occurring in widely separated areas. Can we, in all these cases, give a clear verdict that the water-supply is not responsible? It may be objected that if the water was responsible, the outbreak should surely assume almost epidemic proportions. But we should remember that in any properly controlled water-supply these pathogenic organisms would be few and not distributed uniformly through it, and, unless the contamination was very marked, only a few people would be ingesting those bacteria, and of these few perhaps only one would get a sufficient number to set up the disease process.

No system of bacteriological examination can prevent isolated cases of infection, but if there is no systematic and regular examination of the water-supply such a source of infection is not discovered and the isolated cases of infection go on indefinitely.

One instance will suffice for my purpose. In a certain city during the year 1924, 24 cases of paratyphoid fever were notified as compared with three in 1919, five in 1920, two in 1921, three in 1922, three in 1923, and three in 1925—i.e., 19 in six years, and in only three out of these 19 cases was the source of infection not ascertained. The 24 cases were widespread, and the medical officer of health wrote: "The distribution indicates that there was some agency operating in distributing the infection which had not been operative during the preceding years. From investigations made it is extremely improbable that either milk, cream, or ice-cream was the medium of infection. The agent responsible for the spread must be one that is widely used but not heavily infected, and one probably more partaken of by children than by adults." Though an infected water-supply would "fit this bill," yet it would be hazardous to state that the water-supply was the infecting agent. But what are the facts? The cases occurred during the early part of the year, and during the latter part of the previous year the *B. coli* content of the water was high and was continuously so for a period. This called for a special investigation, and during this investigation organisms of *B. paratyphosus* type were isolated and, in some cases, the bacteria gave agglutination reactions with a paratyphoid serum in dilutions up to 1 in 80. The organisms were very few in number, and I think it is, to say the least, probable that they were the causal factor. Now the search for these organisms was wholly dependent on the regular examination and the finding of excessive numbers of *B. coli* continuously over a short period. Eventually these bacteria were traced to their source. Had there been only irregular examinations, this source of infection would have been missed and an increasing number of cases of paratyphoid fever might have occurred, with the possible result of an epidemic of the disease.

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* Part II. will appear next week.

SPECIAL ARTICLES

TUBERCULOSIS IN MAN AND ANIMALS.

A STUDY IN RESISTANCE.

In communities long civilised and in animals long domesticated a varying degree of resistance or immunity limits and modifies the effects of tuberculosis. We do not, therefore, often get an opportunity in this country of studying natural florid tuberculosis untempered by immunity. "The strengthening against resistance," wrote Sir James Paget [1] many years ago, "the reactions after injury, the turbid activity of repair, the collection and removal of inflammatory products, the casting of sloughs, the discharge of morbid materials from the blood—all these are examples of the manifold good designs of disease; and they evince such strength and width of adaptation to the emergencies of life, we might think the body was designed never to succumb before the due time of its natural decay." And he concludes the matter by remarking that "untimely deaths should make us timely wise." In a monograph,[2] on which we published a short preliminary note last week, Dr. H. H. Scott exemplifies the untimely deaths from tuberculosis of the unprotected. But it is not only the untimely deaths which attract attention to these men and animals, there is also much to be learned from their manner of dying. The florid lesion, the variation in portal of entry, and, quite apart from these portals of entry, the different organs of the body affected in the different natural orders, all combine to make tuberculosis of the non-resistant and unprotected an object lesson in the building up of an immunity. The race is not for the strong but for the immune.

Wild Animals in Captivity.

In the section dealing with tuberculosis in wild animals in captivity (incidentally there are very few data as to tuberculosis in wild animals in their native haunts, but it may be safely assumed that the disease rarely exists, though Cobbett notes three instances in birds) Dr. Scott emphasises a peculiarity of which, at present, there is no adequate explanation—namely, that the organs involved, or most liable to be attacked, appear to differ in different animal species. Furthermore, the tuberculous lesions of captive wild animals differ in two important respects from those met with in the corresponding natural orders of domesticated animals. In the first place, the disease runs a more rapid course; in the second, dissemination of the infecting organism usually takes place early and the lesions are widespread and advanced. It is noteworthy, too, that the wild animal in captivity may remain, to all appearances, in excellent bodily condition up to within a day or two of death from advanced and generalised tuberculosis. The absence of wasting, which is so marked a feature in human beings and domesticated animals, seems to imply a rapid course.

As to the actual incidence of tuberculosis in wild animals in captivity, Dr. Scott believes that the figures at the London Zoological Gardens are probably misleading because fresh batches of animals are constantly arriving (some of which have been in captivity previous to their arrival), and new arrivals, owing to lack of accommodation, may sometimes go straight into cages with older inmates. In more recent days, however, many of the smaller animals have undergone a quarantine period in the sanatorium of the Gardens before being introduced to the society of healthy animals, a provisional isolation which is practised by poultry breeders and others who buy stock from outside sources. As an alternative method of safeguard, in the Zoological Gardens at Philadelphia a preliminary tuberculin test is made. According to Fox, before the tuberculin test was started at Philadelphia the average duration of exhibition life of all monkeys did not exceed 11 months; now it is 35 months. Dr. Scott states that the London Society's record, even without a tuberculin test, has been more fortunate, a considerable number of monkeys live for years without contracting the disease, whilst the proportion dying of tuberculosis has never been a large one.

Localisation in Different Wild Animals.

Turning now to the characteristics of the disease found in different groups of animals, in captive ungulates the well-known serous involvement known as "pearls" is not so common in wild bovidæ as in domesticated. Pulmonary affections of ungulates is a prominent feature, but there are indications, notably in the deer and the buffalo, of pulmonary fibrosis which suggest a certain degree of resistance, and, as in domesticated cattle, calcification may take place early. For some reason, not explained, there is apparent immunity of the spleen. Of the fifteen ungulates with fatal tuberculosis recorded in the series, there is not a single instance of meningeal or intracranial tuberculosis, an immunity recognised in domesticated species also. Taken altogether the facts recorded suggest that the respiratory portal of entry is the common mode of infection in these animals, which is in marked contrast to the disease in monkeys.

Available material for the study of tuberculosis in the latter is much larger, and the reader is referred to a paper by Beattie and Scott [3] dealing with this material, which is republished in the monograph in full. The writers found that the mode of extension of the disease could be explained by the lymphatic distribution, which was worked out with very considerable care and compared with the human cases examined by Dr. Scott in Hong-Kong. Condensing the writers' 10 groups the following classification of the disease in monkeys may be made: (1) cases of undoubted respiratory origin; (2) the same with blood stream dissemination or alimentary infection, or both; (3) cases of primary alimentary infection; and (4) the same with secondary pulmonary infection.

Dr. Scott records 41 instances of tuberculosis in wild birds in captivity in the Zoological Gardens. In these, as in domesticated species, the alimentary tract appeared to be the common portal of entry of the bacillus. Although many orders are represented in the series, including gulls, ostriches, vultures, eagles, and finches, only six examples of respiratory origin were noted and none of these was amongst the gallinæ, the writer's experience supporting that of Fox in Philadelphia that the preponderance of respiratory tubercle occurs only in the Passeres.

[1] Lectures on Surgical Pathology. By Sir James Paget. Second edition. London. 1863.

[2] Tuberculosis in Man and Lower Animals. By H. H. Scott. Special Report Series No. 149. Medical Research Council. HM. Stationery Office. 1930. Pp. 270. 4s.

[3] Jour. Path. and Bact., 1928, xxxi., 49.

As in domesticated birds the type of lesion consisted of isolated nodules having a cretaceous core and giving the impression of being encapsulated, though no capsule is demonstrable microscopically. Pus formation is rare in birds—possibly, as Dr. Scott suggests, because the polymorphonuclear leucocyte is present in much smaller numbers—and, instead of breaking down and softening, a dry necrosis results. Tuberculoma, gelatinous tuberculosis, and three types of intestinal tuberculosis are found, whilst tuberculosis of the liver and spleen are common.

Comparing these records of tuberculosis in captive wild animals with those of domesticated animals and with man, one is struck by the fact that bone and joint tuberculosis and tuberculosis of the central nervous system, which play a considerable part in the tuberculosis mortality in man, are extremely rare in animals both domesticated and wild. These two types are almost unknown, too, in laboratory animals. As far as we know, no adequate explanation is forthcoming on the point and the experimental work thereon is meagre. Excepting the bovines, rabbit, guinea-pig, and rat, which have been extensively used for experimental purposes, the histological side of animal tuberculosis has not been exhaustively explored. When this work is done many of the gaps in our knowledge of the comparative pathology of tuberculosis will doubtless be filled up, and it is possible that an explanation of the rarity of lesions of bones and joints and of the central nervous system will be forthcoming.

Domesticated Animals.

On the question of tuberculosis in domesticated animals, there is, of course, much more information available. The disease is common amongst bovidæ, and has been so well worked out by the Royal Commission that nothing further needs to be said here. Tuberculosis in the dog was at one time considered very rare, perhaps partly because the lesions are often confused with those of sarcoma. Cobbett [4] some years ago compiled a table of published records from the veterinary schools of Europe which varied from 0·06 per cent. in Berlin to 5·6 in Paris. Dr. Scott has now collected the histories of 100 cases. The infecting bacillus was human or bovine, but the former predominated. Of these animals 51 lived in restaurants or cafés where the floors were constantly soiled with human expectoration, and 23 others were in intimate contact with sick persons. Dogs frequenting abattoirs may also become infected. Tuberculosis of the lungs and pleuræ are common, and unlike tuberculosis in man, in whom it is of extra rarity, the pericardium is, according to Cobbett, not an uncommon site of infection.

In domestic birds Dr. Scott states that tuberculosis is fairly common. It is found in gallinaceous birds, in parrots, and in canaries. The disease is a frequent occurrence in gallinæ, and it is met with in epizoötics. It has, indeed, been fairly well worked out. Infection spreads by the excreta, emaciation is marked, and the indications of an alimentary root of infection far exceed the respiratory, the liver and spleen swarming with bacilli. Parrots and canaries are stated to be susceptible to the mammalian types of the tubercle bacillus as well as the avian, and infection from man is on record.

Post-mortem Experience in Hong-Kong.

The findings in the 300 cases of tuberculosis in the human being examined post-mortem in Hong-Kong occupy a considerable part of the monograph. There were 225 children under 10 years of age in the series. Although tuberculous mediastinal glands generally indicated a lung lesion there were 13 per cent. of cases of caseous tracheo-bronchial glands without any focus in the lung, and in rather less than half of these there was evidence in favour of an alimentary portal of entry. For the rest the evidence appeared to be generally in favour of a respiratory origin. In only one instance amongst the children recorded in the series was there an old healed shut-off focus present. This was in a child aged 3 in which the middle lobe of the right lung showed an old fibrous and calcareous nodule, with a terminal generalisation of the disease in the lung and tuberculoma of brain. Meningeal tuberculosis was fairly common as a terminal blood infection. Instances of involvement of the urinary tract, except as part of a generalised vascular dissemination, were rare. There were two rare cases in which there was a tuberculous infection of the internal genitalia in female children of 8 months and 4 years of age respectively. But perhaps the most interesting of all was a group of five infants, three aged respectively 22, 24, and 29 days, and two aged 7 weeks. In the first three there was no disease other than miliary or broncho-pneumonic lesions of the lungs, even the lymph glands being unaffected. In the two of 7 weeks the disease had advanced to the mediastinal glands and pleura, and one had a small cavity in the lung. This series in such young infants, even though of an unprotected race, must be almost unique. They were evidently primary respiratory infections, and presumably resulting from massive doses. Indeed, throughout the series of the Hong-Kong cases the reader is impressed with the intensity of the infection. The natural assumption is, of course, that such acute cases, as in the case of the wild animals in captivity, exhibit tuberculosis in a virgin soil untrammelled by immunity and resistance. But there is another side of the question on which we are still woefully ignorant—viz., the size of the infecting dose. It requires no stretch of imagination to realise that a people coming into contact with Western civilisation may adopt the ways of life of the West in its manifold activities without adopting the standards of cleanliness and natural safeguards of health which the Westerner uses almost as a reflex action. And when lack of immunity and absence of safeguards go hand in hand the result is a foregone conclusion.

[4] Cobbett, L.: Causes of Tuberculosis, Cambridge, 1917.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

THE WHITE HOUSE CONFERENCE.

THE culmination of more than a year's work of facts, findings, and discussion by more than a thousand experts in the fields of child health and education has been reached in the White House Conference, which met in Washington, D.C., from Nov. 19th to 23rd. The conference was augumented to 3000 members by delegates who were invited by President Hoover to attend. Reports of committees were already available in print, and usually these reports have been endorsed by the conference itself. In many cases the conclusions are already well established in child welfare practice and no debate could be expected. In these cases the purpose of the conference seemed to be rather one of popular education than of creative imagination on scientific research. In certain sections—notably the section on medical

service—so much material had been collected that it was found impossible to digest it in time for the conference. The work of this section will, therefore, be continued into next year.

In only one instance did a serious dispute arise over the work of the preliminary committees. The subcommittee of the section dealing with reorganisation of the federal health service recommended that the maternity and infancy work be taken from the Labour Department (Children's Bureau, under Miss Grace Abbott), and transferred to the public health service. Miss Abbott, herself a member of this subcommittee, wrote a minority report in which she said that "the conception of the unity of the child and the value of having the discipline and techniques of the social, medical, statistical, and other related sciences associated in the scientific study was advocated by the conference of 1909 and enthusiastically approved by President Roosevelt and, in turn, by Congress . . . . There is ample evidence that this plan of unified approach has greatly increased public interest in all the problems of children and child life. To remove the health work from the Children's Bureau would not merely remove one section of the Bureau's activities; it would destroy it as a Children's Bureau."

This minority report, in the haste of assembling material for the conference, was omitted from the printed volume of preliminary committee reports. But the omission came to the attention of representatives of women's organisations in the conference, and overnight a remarkably strong protest movement against the majority recommendation made itself manifest. The attempt of the majority of the committee to ignore this protest movement and even to prevent it from becoming vocal merely added to its momentum. It was an astonishing spectacle to see the surgeon-general of the public health service rebuking a leading sociologist for introducing remarks on social welfare in a section on public health matters, and one which gave some force to Miss Abbott's previous arguments. Good sense ultimately prevailed, and the disputed recommendation was referred to a continuation committee, which was instructed to bring in a unanimous report. The conclusion of this same subcommittee that "the creation of a new department with a cabinet officer for the direction of federal health activities is not essential at present to the accomplishment of the objectives to be proposed" passed the conference without exciting any comment. Nor was there any overt criticism of the recommendation that federal grants in aid of health be continued and increased. If the American Medical Association was represented its representatives raised no voice of protest against this continuation of the functions of the late Shephard-Towner Act. It is possible that the excitement over the work of the Children's Bureau prevented discussion upon these other important matters.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

NEW REMEDIES AND OPERATIONS.

In a recent address to the Pharmaceutical Society in Edinburgh Dr. Ralph Stockman, professor in materia medica and therapeutics in the University of Glasgow, dealt with some very practical points. He said it had to be admitted that the profession owed the introduction of some good remedies to manufacturing chemists, and these deserved gratitude also for furnishing reliable preparations of proved and attested remedies mostly in a convenient and pleasant form. There their legitimate function ceased and the rôle of teacher of pharmacology and therapeutics did not appertain to them. Infant foods and artificial foods generally had a dubious record from the point of view of therapeutic activities. The same might be said of treatment by serums and vaccines and also the development of endocrinology, which had furnished medicine with invaluable remedies. A weakness in the medical curriculum was the very large amount of mere description on the teaching side and an almost equal amount of mere memorising on the student side, with a minimum of those disciplines, such as mathematics or physics, which tend to develop reasoning power. This was inherent in biological studies and possibly unavoidable in medicine, but possibly not. It was essential to ensure that during studentship some actual experience in treatment was available. It had sometimes crossed his mind that therapeutic practice might be stabilised intra-professionally by imitating the procedure of their legal confrères and establishing a medical court with medical judges, solicitors, advocates, and juries. Before these courts, with their experienced personnel, highly trained in weighing the law of evidence, new drugs, new treatments, and new operations might be summoned to appear and show reasons for their existence and practice. Some such filter or buffer would be of incalculable benefit to the medical profession and a protection to the public at large.

ALCOHOL AND THE LAW.

In his Henderson lecture on Alcohol and Behaviour Prof. Sydney Smith said that under the new Road Act it was an offence to drive a car while "under the influence of alcohol, to such an extent as to be incapable of proper control of such vehicle." We knew, he said, that any quantity of alcohol diminished the control, and as this loss was gradually progressive, it was impossible to fix any exact point at which a person became incapable of driving a car. The question of diagnosis was thus going to be very difficult. Even when we knew the amount that a person had drunk we were not much further forward, for the effect of drink was not only different in different individuals, but varied enormously in the same individual at different times.

Prof. Sydney Smith also emphasised the fall in the consumption of alcohol in Great Britain. The annual consumption of beer had, he said, diminished to half, and the consumption of whisky to about a quarter, of the amount used in 1900. In the present year this fall was continuing. With this fall in alcohol consumption there had been a similar diminution in arrests for drunkenness, from about 200,000 in 1900 to 60,000 in 1928. The lecturer pointed out that although drunkenness had progressively diminished, sexual crimes had progressively increased. Thus, in the period 1900–04 there were about 1400 cases of rape and other sexual crimes annually, whereas in 1929 there were over 3000 similar cases. There seemed to be little correlation between drunkenness and the more serious crimes of violence and sexual crimes, but it bore a close relation to minor violence, neglect of children, and similar offences. Moderate indulgence in alcohol did not appear statistically to prejudice the expectation of life, but this finding should be accepted with some reserve.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

SWEEPSTAKES AND AFTER.

THE present legislation governing the promotion of sweepstakes in the Irish Free State limits their benefits to such hospital charities as fulfil certain statutory conditions. The success of the recent sweepstake on the November Handicap has suggested to some that these limitations should be abolished, or made less stringent, so that a different class of institutions might benefit. A Bill was introduced to the Dáil last week for the purpose of permitting rate-supported hospitals to share in future sweepstakes. The fate of the Bill is as yet uncertain, but it is clear that what it proposes is something much more than merely the extension of the application of sweepstakes. It introduces a new principle. If the ratepayers are to be allowed to relieve themselves of their financial responsibilities in regard to the maintenance of institutions for the sick, there seems to be no reason why they should not throw their other burdens on the gambling public also. Why not have lotteries for the upkeep of roads, the building of bridges, the provision of houses, and the thousand other activities for which the rating authorities are responsible? If the ratepayer is to be relieved in this way, why not the taxpayer? The way is open for the return of State lotteries.

Meantime, while those who have received sums beyond their hopes for the charities in which they are interested are intoxicated with their past success and their hope of future, there is a growing feeling of distrust of the sweepstakes as a method of financing hospitals, and this feeling is by no means confined to, though most strongly expressed by, the professional moralists. The latter, it is true, had their innings last Sunday, on the occasion of the annual collection in many of the Protestant churches on behalf of the Dublin Hospital Sunday Fund. The benefits of the Fund are to be confined to the hospitals which do not share in the profits of sweepstakes. The clergy, in nearly all cases, made a strong appeal on behalf of these deserving and self-denying charities, and at the same time gave their reasons for opposition to sweepstakes. In so far as these are based on moral grounds the matter is not one for discussion here, but the Archbishop of Dublin and some other preachers touched on another point of great importance on another plane. The Archbishop suggested that to harness the sacred name of charity to appeals to personal gain might strike a serious blow at the voluntary system of giving. Many go further, and are inclined to think that a few more successful sweepstakes are not unlikely to strike at the very foundations of our voluntary hospital system. This may be good, or it may be bad, but it is very far from what was intended by the original promoters of the legislation permitting sweepstakes. If hospitals can derive adequate support from sweepstakes or lotteries, the stimulus to voluntary support is gone. In time, indeed, the support of the hospitals may become a mere incidental tax paid by professional promoters for the privilege of running a sweepstake. It is to be noted that the fees paid to the professional promoters in the recent sweepstake were little less than one-third of the sums paid to the hospitals. The problems raised by a successful sweepstake are much greater and more far-reaching than were at first recognised.

GENERAL MEDICAL COUNCIL.

Committee Business.

(*Concluded from p. 1258.*)

DIPLOMAS OF PUBLIC HEALTH: REVISED RULES.

Sir John Moore moved the adoption of the report of the Public Health Committee, and with it the revised rules governing diplomas and degrees in public health, sanitary science, and State medicine.

Sir George Newman, the chairman of the sub-committee responsible for the revised rules, explained that three reasons had led to the revision. The first was the rapid development of the practice of public health, particularly in obedience to many statutes passed since the framing of the old rules in 1921. The public health officer had become more clinical and less analytical. Moreover, the new medical curriculum had considerably altered the capacity of the men presenting themselves for a diploma. The second reason was the difficulty which the schools, especially the new London School of Tropical Medicine and Hygiene, had found in conforming to the old rigid requirement that the course should occupy 12 calendar months. The third reason was the passing of the Local Government Act, 1929, which had greatly increased the clinical responsibilities of public health officers.

The Council, when directing the revision, had expressed its desire, said Sir George, to reduce the number of candidates who did not intend to practise public health work. Rule 1 had been left substantially alone, but the note appended to it now referred to the clinical aspects of State medicine.

Rule 1.—A period of not less than two years shall elapse between the attainment by a candidate of a registrable qualification in Medicine, Surgery, and Midwifery and his admission to the Final Examination for a Diploma or Degree in Sanitary Science, Public Health, or State medicine.

The purpose of Rule 1 is to provide opportunity for candidates, while passing from the state of pupilage to that of responsible practice, to give mature consideration to the obligations and duties involved in the work of the Public Health Service, and to acquire direct experience of medical work in a responsible capacity, in general medical practice, in hospital or laboratory appointments, or in any special branch of clinical work or study related to State medicine. The Council believe that, in the public interest, the time has arrived to adapt the Diploma or Degree to candidates who are seriously intending to take up Public Health work as a career.

Rule 2 contained the cardinal alteration affecting the arrangements of the schools.

Rule 2.—The curriculum for a Diploma or Degree in Sanitary Science, Public Health, or State medicine shall extend over a period of not less than twelve calendar months (or an academic year of whole-time study covering a period of not less than nine calendar months) subsequent to the attainment of a registrable qualification.

Rules 3 and 4 no longer prescribed a definite number of hours for each of the special subjects, but left the distribution of the aggregate time to the discretion of the teaching bodies.

Rule 3.—Every candidate shall produce evidence of having attended, during not less than 280 hours, at an institution approved by the Licensing Body granting the Diploma or Degree, practical instruction in: (*a*) Bacteriology and Parasitology (including immunology, serology, medical entomology, &c.), especially in their relation to diseases of man, and to those diseases of the lower animals which are transmissible to man; (*b*) Chemistry, Physics, Radiology and Electrology in relation to Public Health; (*c*) Physiology and Biochemistry in their application to nutrition and hygiene; (*d*) Meteorology and Climatology in relation to Public Health.

Rule 4.—Every candidate shall produce evidence of having received, during not less than 120 hours, at an institution

approved by the Licensing Body granting the Diploma or Degree, instruction in the following subjects: (*a*) The Principles of Public Health and Sanitation; (*b*) Epidemiology and Vital Statistics; (*c*) Sanitary Law and Administration (including Public Medical Services); (*d*) Sanitary Construction and Planning.

The subcommittee, continued Sir George, had added to Rule 3 (*a*) immunology and serology, and to (*b*) radiology and electrology; (*c*) introduced something in the nature of a new subject, in response to the unanimous demand of the schools. The total of hours allotted to the subjects in Rule 4 was slightly increased.

Rule 5 required the daily attendances at a recognised hospital for infectious diseases to number 24 instead of the awkward figure of 30.

Rule 6 laid down that instruction in the administration of the special services should include attendance at the centres or institutions concerned. Rule 7 had not been changed and Rules 8 and 9 had been shortened.

Rule 8.—The examination for Part I. shall be practical, written and oral, and shall include the subject referred to in Rule 3.

Candidates may not be admitted to examination for Part I. until after they have completed the prescribed courses of instruction in the subjects thereof.

Rule 9.—The examination for Part II. shall include the subjects referred to in Rules 4, 5, and 6. The examination shall be written and oral, and shall include practical examinations in Infectious Diseases; Food Inspection; Inspection of premises—dwellings, factories, workshops, schools, &c. Candidates may not be admitted to examinations for Part II. until after they have completed the prescribed courses of instruction in the subjects thereof. No candidate shall be admitted to Part II. of the examination for a registrable Diploma or Degree in Public Health until after the lapse of not less than two years from the date of his obtaining a registrable qualification in Medicine, Surgery, and Midwifery, which qualification must be registered in the Medical Register before admission to Part II. of the examination.

Sir Robert Bolam proposed to amend Rule 1 to read: "Not less than two years shall elapse between the registration (instead of 'the attainment') by a candidate of a registrable qualification" in medicine. He considered that this alteration was necessary to ensure that candidates had sufficient experience of the practice of medicine, and to prevent them from entering if they had sequestered themselves in laboratories or scientific work. Sir George Newman expressed his sympathy with the principle, but considered that the amendment would involve excessive hardship, especially—as the President emphasised—to candidates from overseas, and the Council rejected the amendment.

THE NEW SPECIAL SUBJECTS.

The additions to the special subjects excited a lively debate. In reply to questions from Dr. Jamieson and Mr. Eason, Sir George said that, as medical officers of health would now exercise supervision over a large number of institutions in which electrical apparatus was used, it was necessary that its clinical application should not be foreign to them, and that they should be able to advise on its installation and employment. Mr. Monsarrat and Sir Robert Bolam objected that it was impossible in the time to give a candidate a sufficient equipment to enable him to advise on the installation of or treatment by electrotherapeutic apparatus, and Sir Robert moved the deletion of the words "radiology and electrology." Dr. Sheen, in seconding the motion, suggested that logically every specialty should be included in the course, which was in danger of becoming as badly overloaded as the general curriculum. Sir George Newman retorted that it would be better to omit chemistry and physics. It was not, he said, intended to make any candidate a specialist, but to enable him to give intelligent advice to his authority.

Sir Robert Bolam's amendment was lost by 11 votes to 16, but Sir Holburt Waring proposed and Sir Norman Walker seconded an amendment to insert the words "and Biophysics." Mr. Monsarrat objected to the introduction of further complications into a course which already required the services of several teachers, and this amendment was also rejected. Nothing daunted, Dr. Brackenbury proposed to add to the syllabus a course of genetics, but withdrew his motion on learning that it was open to any licensing body to include this subject in the syllabus.

The revised rules were adopted. The words "Medical Register" were substituted by the Council at the end of Rule 9 for the words "Great Britain."

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 29TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 160 (last week 116); scarlet fever, 2182; diphtheria, 1526; enteric fever, 36; pneumonia, 1016; puerperal fever, 36; puerperal pyrexia, 118; cerebro-spinal fever, 16; acute poliomyelitis, 12; acute polioencephalitis, 1; encephalitis lethargica, 12; dysentery, 10; ophthalmia neonatorum, 107. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 2nd–3rd was as follows:—Small-pox, 236 under treatment, 2 under observation (last week 221 and 3 respectively); scarlet fever, 1944; diphtheria, 2217; enteric fever, 14; measles, 84; whooping-cough, 106; puerperal fever, 23 (plus 10 babies), encephalitis lethargica, 121; poliomyelitis, 2; "other diseases," 47. At St. Margaret's Hospital there were 15 babies (plus 5 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 33 (0) from measles, 1 (0) from scarlet fever, 5 (1) from whooping-cough, 44 (9) from diphtheria, 44 (11) from diarrhœa and enteritis under two years, and 56 (5) from influenza.

The fatal case of enteric fever was reported from Barnsley. Nine fatal cases of measles occurred at Hull, 6 each at Bristol and Liverpool. Nine deaths from diphtheria were reported from Liverpool. Diarrhœa accounted for 7 deaths at Liverpool, 3 each at Nottingham and Salford. Influenza was credited with 5 deaths at Liverpool and at Manchester, 4 at Salford, and 3 at Bolton.

The number of stillbirths notified during the week was 273 (corresponding to a rate of 44 per 1000 births), including 59 in London.

CHRISTIE CANCER HOSPITAL.—This Manchester Hospital is to be rebuilt, and it is hoped to begin the work shortly. The British Empire Cancer Campaign has contributed £25,000 and a similar amount has been received from legacies; patients and their friends have given £800. A further large sum will, however, be needed. It is hoped to have the hospital completed by the end of 1932.

LONDON HOSPITAL MEDICAL SCHOOL.—At present this school, the finances of which are entirely distinct from those of the hospital, rents three neighbouring houses which accommodate, not very satisfactorily, 22 students. The need for better quarters is so great that the medical and surgical staff have started a fund, now amounting to over £2000, to which they have themselves subscribed liberally. It is hoped to raise sufficient money to build a hostel close to the hospital which, in Lord Knutsford's words, "would not merely give board and lodging, but would provide some of the features of the collegiate life of the Universities."

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of two counties and the island of Guernsey :—

Name of city and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Derbyshire .. (624,300)	16·6	11·6	0·71	1·15	2·4	1·9	68/—	—	3·7
Rutland .. (18,100)	14·4	14·3	0·72	1·50	3·3	2·4	84/—	—	3·8
Guernsey .. (39,040)	19·4	15·1*	0·90	1·82	2·5	1·8	79/44	20	0·0

Registered stillbirths per 100 live births: Derbyshire 5·0. Rutland —, Guernsey 4·4.
* Standardised 12·0.

Derbyshire.

Dr. W. M. Ash cites as an example of the need for coöperation and coördination of voluntary and official bodies that one of the nine committees of the council, which deal with medical services, is at present considering subscriptions to 100 voluntary organisations for the treatment of the sick. He goes on to discuss hospital accommodation of all types. For isolation accommodation existing hospitals should serve larger areas. Some new hospitals will be required and reciprocal arrangements can be made with the hospitals of county boroughs. Isolation hospitals can serve large areas by means of motor transport because they need not be so readily accessible for visitors and the staffs, and patients for these larger (and therefore more economical) hospitals should be interchangeable. As regards general hospitals, Dr. Ash shows that there is at present a nucleus institution within easy reach of any district in the county, and such nucleus institutions he would have developed into comprehensive hospitals, which would receive medical, surgical, obstetrical, and gynæcological cases from a given area, and comprise children's wards and, if necessary, accommodate the school clinic, maternity, and child welfare centre and tuberculosis dispensary. Each area hospital would thus become a centre of both preventive and curative medicine. Convalescent homes are also needed and accommodation for long-stay cases other than surgical tuberculosis. Dr. Ash also strongly urges that all incipient and early cases of mental sickness should be kept quite apart from the confirmed and advanced cases. He would have the large general and especially the teaching hospitals provide both in-patient and out-patient treatment for this type of case, for if prevention is going to be successfully applied in mental infirmity, early mental treatment must be taught to every medical student. The county antenatal scheme is now functioning fully, and the 12 clinics conducted by Miss E. E. Stephens, M.D., were attended by 939 antenatal cases and 215 postnatal.

The notifications of diphtheria were 649 and the deaths 45—a case-fatality of 6·9 per cent. There were 26 cases of enteric fever with 6 deaths. Two cases occurring, one in March and one in October, in different areas illustrated the difficulties of the carrier problem. Investigation showed that a Mrs. X was living at each house when the case occurred. During 1927 and 1928 two other cases had occurred in houses where she stayed. Three consecutive and several single examinations of fæces and examinations of the urine, also Widal and agglutination tests, all proved negative. Finally, of four consecutive fæcal examinations the first three were negative and the fourth gave a subculture of *Bacillus typhosus*; the fifth and sixth were negative, and the seventh positive. Mrs. X was much distressed and agreed to have her gall-bladder removed. The bile in the gall-bladder gave abundant growth of *Bacillus typhosus* in pure culture, even in dilution of 1 in 1,000,000.

The efficient arrangements made for consultants and admission to hospital is making the notification of puerperal fever more effective, but Dr. Ash points out that, where a case obviously requires hospital treatment, the expense of calling in a consultant as well is unnecessary. All the midwives in the county have been urged to wear masks while attending confinements, especially if suffering from a cold or throat infection.

The orthopædic scheme has been extended. The eight beds at Bretby Hall for non-tuberculous cases have been increased to 65. An additional clinic has been opened at Heanor and considerable progress made with the new 32-bed block for adults suffering from surgical tuberculosis. An endeavour is being made to provide more accommodation for advanced pulmonary tuberculosis within easy reach of the relatives. The sandstone industry (silicosis) scheme came into force on April 1st and 18 new employees were examined by the tuberculosis officers. Under the Housing (Rural Workers) Act, 1926, only nine applications for grants had been received up to the end of 1929. One application was withdrawn and another refused, and grants to the extent of £475 were made in respect of seven dwellings. The classification of the 623 samples of sewage effluents collected during the year was as follows: good, 211; satisfactory, 164; unsatisfactory, 103; and bad, 145.

Dr. A. N. Robertson, medical superintendent of Walton Sanatorium, is not impressed with the value of gold therapy after trying allochrysine and collosol gold. He never saw any harm result from tuberculin if used with proper care, but thinks it occasionally did good, and has a hankering after its use again. He has no doubt of the immense value of surgical methods in suitable cases. Of all diagnostic tests he still places most reliance on the subcutaneous tuberculin method. The number of patients admitted was 343. Ten new cases began artificial pneumothorax treatment and 19 old cases continued. Red ray treatment by the Murray Lævick lamp in cases of pleural effusion has been found useful in diminishing the number of gas replacements.

Rutland.

Dr. Christopher Rolleston reports that his council has made one "declaration" under the Local Government Act, 1929, and that in regard to tuberculosis. The functions of the public assistance committee with regard to poor children apart from their parents and mental defectives will be discharged by the education and mental deficiency committees respectively. The remaining services for mothers and children will be discharged by the maternity and child welfare committee. Dr. Rolleston rejoices at the decline of the birth-rate, partly because of the future of the world's supply of food and partly because men are being replaced by machines. The latter reason does not seem cogent, seeing that the work of the world varies according to its population. The proper solution would seem to be reduction of the hours of work for all! The deaths were greater than in any year since 1918. Dr. Rolleston recommends the provision of trained nurses for the home treatment of pneumonia and arrangements for hospital treatment if the home is unsuitable. The births numbered 261 and 63 maternity outfits were supplied by the council. There were 38 attendances at the orthopædic clinic

at Peterborough, 14 of which were for rickets and 15 for infantile paralysis. Apparatus was provided in 12 cases and six children were admitted to Manfield Hospital. In August-September there was an outbreak of six cases of poliomyelitis at Morcott (population 384). The first cases were not diagnosed. One case, a girl of 13, died. In two cases, aged 8 and 15, the paralysis was confined to the facial muscles. The other three cases, all of the pre-school age, are receiving special orthopædic treatment. The ascertainment and care of the mentally defective and blind is being carried out thoroughly. Several very satisfactory renovations have been made under the Housing (R.W.) Act, and Dr. Rolleston would like to see this Act more used. A modern cement factory has been established at Ketton and employs 140 men. Dr. Rolleston, who lives near the works, is able to say that the amenities of the village have not suffered.

Guernsey.

Dr. H. Draper Bishop reports that the island did not escape the influenza epidemic, which was very fatal to old people. He draws attention to the fact that neither he nor the sanitary inspector has a right of entry to premises, except when infectious disease is notified. Each of the ten parishes has a constable as its executive officer and with the exception of the town parish the constable seldom desires assistance from the States' officials. Dr. Bishop hopes the States will, this year, grant their officials the same right of entry as is given in England. It is difficult to secure support for nursing and infant welfare associations, which are limited to three of the parishes at present. In Jersey there is a nurse for every parish, and Dr. Bishop would like to see a similar arrangement in Guernsey. About one-seventh of the births take place in the Lady Ozanne Maternity Home. A special committee has provided houses for 263 families since 1918, but there is still much overcrowding and a shortage of small houses. The crematorium at the States' Cemetery was completed during the year, and should have a special application owing to the limited area of land available. Dr. Bishop is not school medical officer, but he examined during the year 420 children sent to him by the school nurse.

The chief industries of the island are growing fruit, vegetables, and flowers under glass, granite quarrying, and the rearing of cattle. The latter are said to be free from tuberculosis, so that a special interest attaches to the deaths from non-pulmonary tuberculosis. There were six such deaths (a rate of 0·16) in 1929—namely, two at age-period 5 to 15, tuberculous peritonitis and tuberculous meningitis respectively; two at age-period 15–25, tuberculosis of joints and spine respectively; and two at age-period 25 to 65 from tuberculosis of kidney and spine respectively.

MENTAL HOSPITAL REPORTS.

Of the WEST RIDING MENTAL HOSPITALS that at WAKEFIELD had 2395 patients in the institution at the end of last year. The recovery-rate was 25·9 per cent. and the death-rate 7·5 per cent., the lowest on record for this institution. Autopsies were performed in 88·7 per cent. of cases. The institution shop has proved a very great success. The laboratory performed over 4000 examinations during the year and the operating theatre and the X ray and light department were kept busy. There was no typhoid, but 11 cases of dysentery. The out-patient department received 65 new cases, bringing the total on the register to 180. A great deal of work has been carried out in an attempt to bring this old institution into line with modern requirements. Parole has been given to 38 men and parole within the estate to 120 men and 497 women. There are a number of young people in the hospital, and troops of boy scouts, girl guides, and wolf cubs are run for them; they attend handicraft classes and keep pets. Fifty-four women nurses work on the male side; two nurses obtained their G.N.C. certificate during the year, bringing the total of certificated or registered to 85 men and 24 women. The hospital at STORTHES HALL, KIRKBURTON, near HUDDERSFIELD, had 1771 patients in residence on Dec. 31st last. The recovery-rate was 28 per cent. and the death-rate 8 per cent. Money allowances were granted to 24 discharged patients. Owing to an increase of 60 beds provided during the year, the hospital has now room for 1836 patients and is therefore not overcrowded. The general health during the year was good; there was no typhoid and only six cases of tuberculosis. There were 14 cases of dysentery, 11 of erysipelas, and some influenza. Useful work was provided for 50 per cent. of the men and 40 per cent. of the women. A variety of occupations are available, and the numbers are satisfactory considering the large number of senile and chronic patients. During the year a class in mat-, basket-, and rug-making was started for the blind. Malarial therapy was continued for general paralysis in 14 cases; one patient left to resume his work and six improved. A welcome addition to the hospital equipment is the new treatment centre, containing an operating theatre and sterilising room, and X ray, actinotherapy and dental rooms. The dentist attended weekly and saw a large number of patients. The laboratory performed nearly 4000 examinations. Two shops were opened where patients can buy necessities; any profits will be directed to the provision of amusements. During the year ten attendants and five nurses passed the final R.M.P.A. examination and one nurse the final G.N.C. examination. There are now 52 attendants and 32 nurses certificated or registered.

Of the two HAMPSHIRE MENTAL HOSPITALS, that at KNOWLE had 1056 patients on its books on the last day of last year. The recovery-rate was 32·78 per cent. and the death-rate 5·6 per cent. The cause of death was verified by post-mortem examination in 71 per cent. of the fatal cases. There were five cases of typhoid, and a search for carriers is still being made. There was one case each of scarlet fever, diphtheria, and measles. Six cases of general paralysis were treated by malaria and two were discharged recovered. A new admission block and a new nurses' home are under consideration. During the year six nurses obtained their R.M.P.A. certificate. At PARK PREWETT there were 1298 patients at the end of 1929. The recovery-rate was 22 per cent. and the death-rate 8 per cent. There were only five cases of tuberculosis under treatment at the end of the year. Four deaths resulted from this disease, three from dysentery, and five from influenza, but the general health was good. A series of sporadic cases of erysipelas has now ceased. The consulting surgeon performed four major operations and the dental surgeon and ophthalmic surgeon attended regularly. Two cases of general paralysis treated with tryparsamide were discharged recovered, but other cases showed little improvement; three men were sent to Knowle for malarial treatment. The pathological laboratory, in addition to routine investigations, has been studying undulant fever, three cases of which appeared in the hospital. The Meinicke micro-reaction is used as a routine test for all new cases. A new nurses' home was opened during the year and eight cottages for married staff have been built. Ultra-violet ray apparatus has been installed in the admission hospital and a villa has been equipped for male patients on parole. Every effort is made to induce patients to work, but the visiting commissioners urge the appointment of an occupations officer. Eight nurses passed the R.M.P.A. examination.

"PENNY-IN-THE-POUND NEWS."—This new organ of the Merseyside Hospitals Council, issued free, describes each month the progress of the remarkably successful contributory scheme. In the November issue Mr. Sydney Lamb, the secretary of the council, tells how the scheme came into being, and describes the rapidity of its progress, but estimates that there are still some 225,000 persons who ought to be enrolled. At least 95 per cent. of the large firms have, however, already joined the scheme. By means of an ingenious pictorial map an appeal is made to motorists to volunteer to take relations of patients to hospitals in urgent cases during the night.

CORRESPONDENCE

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—In view of the importance of milk in the diet of both children and adults, it is necessary for the known facts regarding the safety of this article of food to be placed before consumers and all concerned.

It is widely acknowledged that the average consumption of milk in this country could be greatly increased to the benefit of the public health and the improvement of the national physique. A substantial increase, however, cannot be anticipated until public opinion demands the highest standards and practice of milk production and distribution.

In this country an effort has been made to improve the milk-supply by means of a grading system and, notwithstanding a certain measure of confusion that has arisen from the excessive number of grades, it is still fundamentally true that the ideal milk supply would be that which would conform to the highest grade defined by the Ministry of Health, namely, "Certified milk."

In practice, however, it is found that only a very small proportion of the public are able to afford this grade, even for the feeding of infants, and the same position, in varying degrees, applies to the other grades that lie between it and pasteurised milk, which is the form of milk commonly distributed in great centres of population. Experience has shown that where pasteurisation (the heating of milk under conditions which ensure the destruction of harmful bacteria, yet leave the vitamins unimpaired) is generally practised, infection traceable to milk recedes almost to vanishing point. This fact has led no fewer than 21 cities in the U.S.A. to ordain the compulsory pasteurisation of milk.

The signatories, while expressing no opinion on the principle of compulsion, are emphatically agreed that the time has arrived when, in order to increase milk consumption and diminish the risk of milk infection, pasteurisation should be universally recognised as the immediate practical method of ensuring safety. They record their satisfaction at the fact that about 90 per cent. of the London supply is pasteurised with markedly beneficial results.

They are of opinion that the first step in educating the public to demand pasteurised milk should be the simplification of the present milk grading system and the clear labelling of pasteurised milk as such. They are further of opinion that while no effort should be relaxed to improve milk at the source, the entire milk-supply—excepting "Certified milk"—should be pasteurised.

We are, Sir, yours faithfully,

DAWSON OF PENN. H. CHARLES CAMERON.
THOMAS HORDER. CHARLES PORTER.
JOHN ROBERTSON. JAMES FENTON.
ROBERT HUTCHISON. JOHN MACMILLAN.
A. BOSTOCK HILL.

Dec. 9th, 1930.

NEUTRALISATION OF POLIOMYELITIS VIRUS.

To the Editor of THE LANCET.

SIR,—In an article published in your issue of Oct. 25th (p. 895) Dr. R. W. Fairbrother and Dr. W. G. Scott Brown record the results of experiments on the action of the serum of various individuals on the virus of poliomyelitis. They conclude that immunity to the poliomyelitic virus, as indicated by the presence of antivirus, is frequently present in normal people who have been in contact with definite cases of the disease without developing it. They quote the work of Anderson and Frost (1911) who, in seven normal individuals (employed as controls in investigating the serum of cases of poliomyelitis), found complete neutralisation in one case and partial neutralisation in two cases.

Will you permit me to draw attention to my researches[1] in collaboration with C. Kling on the Swedish epidemic in 1912. We studied the serum of nine normal individuals, of whom seven were close contacts with cases of poliomyelitis and two, children of 14 months and 2 years of age respectively, had never suffered from poliomyelitis or been in contact with cases. In the first series there was complete neutralisation in two cases, partial neutralisation (lengthened incubation period in the monkeys inoculated) in four cases, and no neutralisation in one case. In the second series there was almost complete neutralisation (incubation period of 32 days) in one case and no neutralisation in the other. Thus the serum of certain healthy individuals, most of whom were living in an infected area and—so far as could be judged from clinical manifestations—showed an immunity to the virus, neutralised completely the virus of poliomyelitis in the proportion of almost a third, and partially in the proportion of 5 : 9. We concluded that microbicidal properties which totally or partially neutralise the virus of infantile paralysis are present in the serum of individuals who have been living in intimate contact with cases of poliomyelitis without developing the disease. Their immunity could therefore be attributed to the presence of these microbicidal substances in the blood. We also stated our opinion that the immunity was due to latent infections, the organism reacting to the virus only by the production of antibodies, or, in some instances the immunity followed the abortive form of the disease that had not been diagnosed as such.

These results explain the unequal receptivity of human subjects to the virus of poliomyelitis during the course of epidemics.

I am, Sir, yours faithfully,

Dr. C. LEVADITI,
Paris, Dec. 2nd, 1930. Professeur à l'Institut Pasteur.

[1] Annales de l'Institut Pasteur, 1913, xxvii., 839.

PREVENTION OF SCARLET FEVER IN SCHOOLS.

To the Editor of THE LANCET.

SIR,—May I be permitted to add to my first letter in view of Dr. Glover and Dr. Griffith's communication. The object I had in mind was, as I stated, to correct the impression which their paper inevitably created—viz., that nothing could be done to stop an epidemic of scarlet fever in a school. Their statement was that passive immunity is too evanescent for use in a boarding school, that it has the disadvantage to sensitise to serum (we have now fortunately Dr. Dunn's account of the use of this method by him at Uppingham, *a boarding school*, for the last three years with complete success, upon which I wish to congratulate him), and that the production of active immunity by the Dick method took too long and was too uncertain; these pronouncements, coupled with their admission that the ordinary

methods of isolation, disinfection, &c., which were carried out very carefully were disappointingly unsuccessful, and the fact that bacteriology in their hands (and it could not have been done more efficiently) was found to be of no practical value, led to the inevitable conclusion that nothing in fact is of any use to control an epidemic of scarlet fever in a school. I quoted my experience at the day school not for comparison with theirs, but to demonstrate that it had been done; readers will draw their own conclusions and these will naturally vary with their apperceptions.

I referred to the Dicks, and I may perhaps usefully add further that: [1]

"They have had an opportunity to employ this method of controlling scarlet fever in 218 families in which scarlet fever had occurred and in epidemics in four different institutions. No new cases of scarlet fever developed in these families or institutions later than 48 hours after the control of the epidemic was undertaken, except in instances where for some reason it was not possible to follow the prophylactic administration of antitoxin by active immunization with the toxin before another exposure to immune carriers or the return of the convalescent scarlet fever patient to the home."

Such work by the Dicks cannot be dismissed as being of no significance. The uncertainty about active immunity against scarlet fever (which was mentioned) has been shown [2] by Toyoda and Futagi to be due not to the non-establishment of immunity, but to the inaccuracy of the Dick test, as usually performed. They demonstrated that the Dick test toxin consists of a heat labile and heat stabile portion, which they separated, and that the heat labile toxin only is the true indicator of susceptibility to scarlet fever, heat stabile toxin often giving allergic skin reactions, mistaken for positive reactions, in those subjects who were immunised against streptococci or scarlet fever.

But if we have been erring, we have been erring on the right side, assuming, as we did some to be susceptible who were in fact immune, because the negative Dick test with whatever Dick toxin produced did and still does indicate immunity to scarlet fever.

I am, Sir, yours faithfully,

W. EDGE,
Medical Superintendent, Ladywell Sanatorium
Dec. 8th, 1930. (Infectious Diseases), Salford.

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—In his address delivered at the opening of the Banting Research Institute of Toronto University (THE LANCET, Oct. 11th, p. 779) Lord Moynihan was unfortunate in his choice of the researches of Hunter and Royle to illustrate "the somnolence of physiologists."

Hunter and Royle were attracted, as others have been before them, by the idea of a dual innervation of skeletal muscle, and particularly by the suggestion that the sympathetic nervous system might be responsible for the maintenance of postural or "plastic" tone. They performed a number of experiments on goats and pigeons, and they drew conclusions which were entirely at variance with those which had been arrived at by physiologists and others working in the same field. They admitted this, but they claimed that the *clinical* results of sympathetic ramisectomy in human beings were so remarkable that physiologists would be compelled to alter their views on the physiology of muscle and bring them into line with their own.

As soon as this work was published, some of us performed sympathetic ramisectomy in a number of carefully selected cases of spastic paralysis, with every possible precaution against technical error, and we failed to get any results comparable to those claimed by Royle. But, even before we operated on these cases, we were met with the unanswerable argument that anyone who did this operation and failed to get the results which Royle described was either an incompetent surgeon who failed to divide the sympathetic rami, or an indifferent neurologist who could not interpret the signs.

In the face of this argument there was only one thing to do, and we did it. We, a group of orthopædic surgeons and a neurologist, got hold of Royle when he was in this country in 1927. We took him down to Carshalton and gave him a free choice of a large number and variety of cases of spastic paralysis, and of these he selected six which in his considered opinion were suitable for the operation of sympathetic ramisectomy. The selection was made with care and deliberation, since the avowed object of the ensuing operations was to demonstrate to us and convince us of the remarkable results of sympathetic ramisectomy in cases of spastic paralysis. We examined these cases with Royle before operation, we made him operate upon them in our presence, we examined them again with him soon after operation, and lastly we examined them again two years later. The results of these investigations were briefly recorded in THE LANCET of July 19th, and it will be seen that they fail to substantiate in any particular the physiological conclusions of Hunter and Royle.

There, so far as we are concerned, the matter rests. Royle objects to our drawing "sweeping conclusions" from a small number of cases, and he would rather have us accept without question his own estimate of cases which we have not seen and which we have no opportunity of judging on their merits. We, however, prefer to believe the evidence of our own senses, and reports of hundreds of "successful cases" from America and elsewhere leave us cold.

In your issue of Nov. 29th Royle reiterates his one and only reply to criticism—namely, that we are incapable of doing the operation or of interpreting the results. He starts badly by repudiating his one-time friend and colleague, J. I. Hunter, since he objects to our coupling the name of Hunter with his own. We are aware that Royle got his first paper into print a few months before Hunter published his. But, in this same paper, which lies before me as I write, Royle says:—

"In conclusion, I wish to express my indebtedness to Prof John I. Hunter for his assistance in arranging the plan of experiments and for his constant advice and help in interpreting the results obtained. He also rendered invaluable assistance in planning the surgical operations. The experimental work was carried out in Prof. Hunter's laboratories."

We may not agree with the physiological conclusions of this brilliant young anatomist, but those who know the work of both these men have little doubt that the operation of sympathetic ramisectomy would never have originated in Sydney without the help and inspiration of J. I. Hunter.

Royle now asks us "which operation in the lumbar region produces a diminution of tone in the lower limbs and for what length of time?" The answer, as he well knows, is any major operation, and for

[1] Acute Infect. Diseases, Schamberg and Kolmer, p. 461.
[2] Jour. Infect. Dis., March, 1930, p. 196.

about a week or more. In his original paper already referred to (page 10 of the reprint) he writes:—

"The handling of the tissues in this (the lumbar) region could profoundly affect reflex activity within a few days following the operation and the changes then seen could not necessarily be ascribed to the removal of the sympathetic trunk."

This is precisely what we have observed both in our own cases and in those operated upon by Royle. But we have allowed for this obvious source of error in estimating the end-results of his cases, while he has not. He says, for example, that in Case 4 of our report "Ramisection produced *immediate* improvement in range of movement and alteration in reflexes." We know it did, but that has nothing to do with the end-result which was a complete failure. Some at least of the records which have been used to illustrate the results of ramisection were taken within a few hours of the patient's coming round from the anæsthetic, and to our knowledge the temporary improvement then noted has not been maintained.

The time has come for plain speaking. (1) The operation of sympathetic ramisectomy for the *relief of spastic paralysis* is based upon an unsound physiological research, and it is a complete failure. (2) It has been "boosted" as I believe no other operation has been in our time. (3) Faultlessly performed by Royle himself in cases of his own selection, it has under accurate observation entirely failed to vindicate the claims which he has put forward for it. There is no evidence that the sympathetic nervous system is responsible for the maintenance of postural or "plastic" tone in skeletal muscle, and division of the sympathetic rami communicantes does not confer any lasting benefit on patients suffering from spastic paralysis. There would therefore appear to be no justification for its performance in such cases. (4) Royle, with the "invaluable assistance" of J. I. Hunter, devised a technique for dividing the sympathetic rami communicantes. This is a purely technical achievement and has nothing whatever to do with physiological research. Every student knew before that division of sympathetic nerve-fibres would produce a corresponding vasomotor paresis, though, I would add, this is not necessarily obvious in the coarse skin of some hospital patients. (5) It may well be that sympathetic ramisection has proved or will prove to be of benefit in certain cases of vascular disturbance and perhaps in some other conditions, such as arthritis, in which a more or less permanent vasodilatation would appear to be desirable. But this again has nothing to do with the physiological problem of postural or "plastic" tone in skeletal muscle.

I am, Sir, yours faithfully,

A. S. BLUNDELL BANKART.

Harley-street, W., Dec. 6th, 1930.

DIAGNOSIS OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In his Mitchell lecture Dr. Burrell shows how each symptom of tuberculosis settles down into a surer and saner place. Take hæmoptysis, for example; even 20 years ago this was treated with ice-bag and absolute rest; to both physician and patient it was almost the signal for the nearest undertaker. Look at the picture now. The advent of artificial pneumothorax, done with the promptitude made possible by the motor-car, has completely changed the outlook for a majority of cases. I cannot agree with Dr. Carver that the physician is apt to be misled by hæmoptysis resulting from gingivitis; if Dr. Burrell's common-sense way of dealing with a case is employed the diagnosis should be simple enough. We have, indeed, materially advanced in our conception and treatment of pulmonary tuberculosis in spite of what is said so often to the contrary.

I am, Sir, yours faithfully,

J. D. MACFIE.

Winsley Sanatorium, near Bath, Dec. 3rd, 1930.

To the Editor of THE LANCET.

SIR,—We should all be grateful to Dr. Burrell for his excellent summary of the chief diagnostic points in pulmonary tuberculosis. I am particularly glad to see his reference to the value of a negative sputum. It has always appeared to me very unlikely, after carefully examining a "real pussy spit" two or three times, and finding it negative for tubercle bacilli, that the underlying lung trouble was tuberculous.

I would be grateful for an opinion from some authority as to the importance to be attributed to one symptom not mentioned by Dr. Burrell. I refer to disturbance of the menstrual function. It may be said that there are many other diseases which cause this symptom, but then the same thing may be said of cough. When a young girl comes to me with some of the other symptoms of the disease, and in reply to a leading question about her menstrual health, says that there is some disturbance (usually absence), I take it as a point in favour of a positive diagnosis. On the other hand, if she says she is all right that way, and if, nevertheless, she is diagnosed as pulmonary tuberculosis, I would expect her to do better than a similar case with amenorrhœa.

I am, Sir, yours faithfully,

P. J. BURKE,
County Tuberculosis Officer, Sligo.

Central Tuberculosis Dispensary, Sligo, Dec. 3rd, 1930.

OCULAR NEUROSES AND SO-CALLED EYESTRAIN.

To the Editor of THE LANCET.

SIR,—Your annotation on Dr. G. S. Derby's paper (THE LANCET, Nov. 22nd, p. 1136) raises questions affecting public policy which need an authoritative answer. Dr. Derby is not the first to point out that eyestrain is not responsible for many of the troubles usually accredited to it. His distinguished countryman, Dr. J. J. Putnam, expressed the same views over ten years ago. In regard to treatment Dr. Derby says it is rarely necessary to call in a trained psychologist. That may be so in private practice, but it is an interesting speculation as to what would be the result of the examination of (say) the 140,000 school-children for whom, according to a statement made in the House of Commons last month, glasses were provided in 1929, if a trained psychologist were asked to separate the sheep of unblemished ophthalmic importance from the goats of neurotic ophthalmic masquerading. Dr. Millais Culpin, an unprejudiced and cautious observer, in his investigations on behalf of the Industrial Fatigue Board, has for a long time accepted the wearing of weak convex glasses for distance as a symptom of a neurotic disposition. I much doubt if the complacency of

orthodoxly conducted eye departments of school clinics would survive his report. There are certainly many cases in my department which I should dearly like to pass on to the trained psychologist.

Further, now they are getting hard up, the friendly societies might with advantage ask for such a report on their members before spending their money so freely on optical benefit without expert guidance. Lastly, it might cause those responsible for the public weal to hesitate before letting loose State-registered opticians upon a public already deluded by a medical myth. Let it not be forgotten that only a few years ago serious claims were being made that miners' nystagmus was due to errors of refraction. Yet no one smiled.

I am, Sir, yours faithfully,

Portsmouth, Dec. 7th, 1930. W. S. INMAN.

THE CHARTERHOUSE RHEUMATISM CLINIC.

To the Editor of THE LANCET.

SIR,—Dr. Congdon has set forth certain figures which emerged in the attempt to determine the value of vaccine treatment in cases of rheumatoid (infective) arthritis. Very little difference is shown between the treated cases and the controls, a result which is in full accord with the adverse opinion generally held in regard to the method. In her series of 330 cases, vaccine treatment failed. Assuming that this failure was not due to technique, bacteriological or nosological, then her figures are confirmatory of the view (which I first published in 1914) that true rheumatoid arthritis is not primarily caused by a streptococcus but by a white staphylococcus, which I then named the *S. epidermidis albus* var. *deformans*, or more shortly the *Micrococcus deformans* (of which, as Dr. Graham-Bonnalie states in his letter of last week, there are two types). If my view is correct, then failure to benefit the disease by vaccines of a non-causative organism, such as a *Streptococcus viridans*, has no bearing whatsoever on the value of specific vaccine treatment. It merely serves to show that non-specific vaccines are of no great value in the treatment of this type of disease.

My personal experience is the exact opposite of Dr. Congdon's. Rheumatoid arthritis responds extremely well to vaccine treatment, and if taken in time should never fail to be cured. The sooner this fact is recognised the better, for, with the exception perhaps of osteo-arthritis of the hip-joint, there is no form of rheumatic disease so refractory to ordinary treatment, or more frequently made worse by misguided attempts at alleviation. Nor is there any disease which is more terrible in its results—attacking as it does young people in the prime of life and turning them into bedridden cripples. Fortunately, however, true rheumatoid arthritis is a comparatively rare disease. Only about 5 per cent. of the cases at the Charterhouse Rheumatism Clinic are of this type. Of these all the early cases have done well, and even some advanced cases have recovered sufficiently to resume their occupations. Dr. Congdon's criterion of "improvement before treatment" does not apply at the clinic, as all cases, practically without exception, are getting worse when they first attend. Then there is the question of environment. The advantage here is all on the side of the Devonshire Hospital. Patients, whether in the wards or attending as out-patients, must mostly be away from their usual surroundings, whereas those attending the Charterhouse clinic, if too crippled to carry on their ordinary avocations, are at least living in their usual, often most unfavourably situated homes.

Osteo-arthritis, mixed arthritis, and fibrositis constitute the enormous majority of our cases, but in Dr. Congdon's opinion these types are too diversified for examination by the usual mathematical methods, and could not count in any case because their infectious nature is not generally recognised. Nor was that of tuberculosis 50 years ago. The medical staff at the Charterhouse clinic is working on the hypothesis that osteo-arthritis and fibrositis are infective diseases and as such should be amenable to vaccine treatment. The answer to the objection that no statistical judgment is possible surely must depend on the form of treatment to be judged. Where this is expectant or entirely symptomatic, diverse types must be recognised for statistical purposes. But in specific vaccine therapy the classification becomes bacterial and types no longer matter. For example, lobar pneumonia and an arthritis due to pneumococci, however diverse in type, could both be classified statistically as pneumococcal infections. In the same way at the Charterhouse Rheumatism Clinic we group osteo-arthritis and non-articular rheumatism as mainly streptococcal diseases, and rheumatoid arthritis as mainly staphylococcal, thus not only simplifying the whole conception but rendering all types, however diverse in appearance, suitable for simple statistical treatment.

As evidence in favour of the bacterial hypothesis we adduce our experience that, almost without exception, "reactions" follow individual doses of streptococcus vaccine in nearly every case of osteo-arthritis and of fibrositis, just as occurs in the tuberculin test, but—and this adds to the significance—with very much smaller doses when measured in dried weight of bacterial content. We are completely satisfied that the results at the clinic are due to our making this hypothesis the basis of our treatment. Added to this, as Dr. Graham-Bonnalie says, we have recognised that the whole body may be involved in the rheumatic process, in consequence of which dosage must be far lower than it would be in any less generalised complaint.

I am, Sir, yours faithfully,

H. WARREN CROWE, D.M., B.Ch. Oxf.

Portland-place, W., Dec. 8th, 1930.

TWINNING IN MONGOLISM.

To the Editor of THE LANCET.

SIR,—Dr. Coupland asks for the number of known instances of twin-births, in which one twin is mongoloid and the other normal. The best recent paper is, perhaps, that by Macklin (*Amer. Jour. Med. Sci.*, 1929, clxxviii., 315), in which a list of about 38 such are given; but lately others have been added. There is, however, reason to believe that the number of cases known is but a fraction of those that have occurred during the last 30 years. It is desirable that anyone reporting future instances should remember the three distinctions that can be made. Thus: the birth may be (1) uniovular or binovular; (2) heterosexual or homosexual; and (3) monomongoloid or bimongoloid. Monomongoloid twin-births are, apparently, always binovular, but may be heterosexual or homosexual. It should be, but is not, superfluous to insist that a reporter should always give his reason for considering a particular twin to

be "normal" or mongoloid. Unfortunately, it is becoming fashionable to describe as a "mongol" almost any child of undifferentiated ethnic type with general fœtal characteristics, in forgetfulness of Langdon-Down's own definition of the class he described. This definition it is our duty and our right to conserve.

The question of twinning in mongolism is discussed at some length in an entirely rewritten version of my book "The Mongol in our Midst," which will be published by Messrs. Kegan Paul and Co., in a few days.

I am, Sir, yours faithfully,

F. G. CROOKSHANK.

Wimpole-street, W., Dec. 6th, 1930.

MEDICINE AND THE LAW.

Statistics of Criminal Abortion.

THE Criminal Statistics for Scotland for the year 1929 (recently published as Cmd. 3699) give the usual tabular information as to the common-law offence of procuring or attempting to procure abortion. The total number of cases made known to the police in the year was seven. One man and six women were proceeded against; one woman was discharged and not called for trial, another was released on a verdict of "not proven." The rest were convicted and sentence to imprisonment or in one case penal servitude. The Scottish statistics of criminal abortion are low. The average number of such crimes charged annually in the quinquennial periods ending in 1914 and 1924 was only 2 and 5 respectively; the total of such charges for the past five years have been 4, 9, 5, 5, and 7. For England in the corresponding quinquennial periods ending 1914 and 1924 the figures for this offence known to the police were 40 and 48, while the number of persons actually tried was 30 and 32. The 1929 statistics for England are not yet available. The annual totals for the years 1925 to 1928 are far more substantial than the Scottish totals—namely, 86, 55, 74, and 113 known to the police; and 62, 41, 44, and 74 persons actually brought to trial. The introduction to the English Criminal Statistics for 1928 admits that the rise in 1928 over the quinquennial average for 1910–14—(i.e., the rise from 40 to 113) "no doubt reflects a real increase in this offence."

Criminal abortion is notoriously an offence difficult to prosecute to conviction. It is not committed *coram publico;* the women who have employed the services of an abortionist are reluctant to come forward, and, when they do, their evidence requires corroboration because they are in a sense accomplices of the accused person. It is thus the less surprising that in England in 1928 only 74 cases were brought to trial out of 113 known to the police, and only 57 out of the 74 prosecutions resulted in a verdict of "guilty." Out of this array of figures the simple fact emerges that, in the latest year for which statistics are available, there were only 57 criminal abortionists in England and only five in Scotland. If the medical practitioners of Great Britain met in camera to estimate a total in the light of their own information or strong suspicions, what would that total be?

Unsuccessful Action for Medical Fee.

A medical practitioner obtained judgment against a widow in the Bow County Court for £1 11*s.* 6*d.*, his professional fee for attendance on her late husband. Last week the defendant applied to set aside the judgment and to obtain a new trial. According to her statement her husband had been taken ill at 3 A.M.; she had sent in to her next-door neighbour to fetch the panel doctor. Another practitioner arrived half an hour after her husband had died; the widow stated that she at once told him that he was the wrong doctor. The practitioner who was thus brought on the scene and who had made the claim for an attendance fee was unable to say who had sent for him; he understood the police had been called in. Judge Owen Thompson, K.C., said that without question the plaintiff practitioner had earned a fee from somebody; the question was from whom. His honour said it looked like a police call. He sympathised with the practitioner, but the circumstances did not make the widow liable. If, said his honour, I grant the widow a new trial, the practitioner does not stand much chance of winning, as he was not called by the widow's authorised agent. In the circumstances the plaintiff doctor decided not to proceed with the action. The judge seems to have assumed that the practitioner was called in by the police; if he had been called in by the next-door neighbour, he would presumably have been summoned by the widow's authorised agent.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are announced: Surg. Lt.-Comdr. C. H. Savory to *Pembroke*, for R.N. Hospital, Chatham; Surg. Lt.-Comdr. (D.) F. W. Paul to *Pembroke*, for R.M. Infirmary, Deal; Surg. Lts. W. C. Sloan to *Warspite;* G. D. J. Ball to *Victory*, for R. M. Infirmary, Portsmouth; and G. A. Miller to *Dahlia*.

ROYAL NAVAL VOLUNTEER RESERVE.

Lt.-Comdr. L. L. Withrington to *Champion*.

Proby. Surg. Lt. (D.) F. J. Goldsworthy to *Victory*, for R. N. Hospital, Haslar.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. B. H. V. Dunbar, from R.A.M.C., to be Col., vice Col. A. H. Safford, to retd. pay.

Maj. A. H. Bond to be Lt.-Col., vice Lt. Col. B. H. V. Dunbar, promoted.

Capt. L. Game relinquishes his temp. commn.

Temp. Capt. Michael J. Whelton to be Maj.

ARMY DENTAL CORPS.

W. E. Duckworth to be Lt. (on prob.).

ARMY RESERVE OF OFFICERS.

Lt. L. P. Clarke from Reg. Army Res. of Off., Norfolk Regt. to be Lt.

TERRITORIAL ARMY.

Maj. F. R. Harris to be Lt.-Col. and to comd. 140th (C. of Lond.) Fd. Amb.

Capt. G. Whittaker to be Maj.

Lt. W. H. G. Park to be Capt.

DEATHS IN THE SERVICES.

The murder of Lt.-Col. Norman Skinner Simpson, I.M.S., on Monday last has been announced by telegram from Calcutta. The murder took place in the premises of the Bengal Government, where the offices of the various heads of the departments are situated. According to one report, the murder of Col. Simpson may have been due to the accident of the location of his room, but it must be remembered that previous to his appointment as Inspector-General of Prisons in Bengal, he had been a superintendent in the Gaol Department, and may have been a marked man among fanatics. Col. Simpson, who had a fine professional record, was only 49 years of age.

Surg. Capt. R. J. Willan, M.V.O., O.B.E., V.D., Royal Naval Volunteer Reserve, has been appointed an Honorary Surgeon to the King, vice the late Surg. Capt. A. R. Brailey, V.D.

OBITUARY

FRANK EDWARD NICHOL, M.B., B.Chir. Camb.

WE regret to announce the death of Dr. Frank Nichol, the well-known Margate practitioner, which occurred on Nov. 28th at his house in Cliftonville.

Frank Edward Nichol was born in 1861, was educated at Dulwich College and Caius College, Cambridge, and made a mark both at school and college as an able student and a vigorous athlete. He proceeded from Caius to St. Thomas's Hospital, took the double English qualification in 1885, and graduated M.B., B.Chir. Camb. two years later. He served as house surgeon at his hospital, and also as clinical assistant in the dermatological department, after which he took up his residence in the town where he has died, to the deep regret of a neighbourhood which he had served faithfully for 40 years. For while attending assiduously to a large private practice he found time to be a leader in all the movements for the welfare and progress of the town. His gift of public speaking, and his musical talent stood him in good stead in these public movements. For many years he was surgeon to the Margate Hospital, and on the medical staff he was a tower of strength. He was medical officer to the Royal School for the Deaf, to the West Ham Union Convalescent Home, the Victoria Home for Invalid Children, and the Royal Sea Bathing Hospital, and at every one of these institutions he earned appreciation not only for ability but for generosity in attitude and action. The erection of the new Margate Hospital, a development of the old Cottage Hospital, was largely due to Nichol's recognition that such an institution was needed to meet the growing population of Margate, and especially the increasing motor traffic. He worked hard and well on behalf of the new venture, and the success of the scheme from the beginning was greatly due to his public and professional qualities. With the hospital he had been officially connected since his election to the staff in 1897, and his retirement was the occasion of an eloquent expression of admiration from the committee of management, at whose instance one of the wards was named the Nichol ward.

Although he took no part in municipal administration he was a valued counsellor of those who did, and so clearly was he marked out as a man of affairs that the proposal was made to him that he should offer himself as the representative of the Isle of Thanet in Parliament. From the party point of view the idea was a thoroughly sound one, and Nichol's candidature would probably have been followed by a successful election, but he considered that parliamentary duties would have been impossible without relaxation of other energies, which he held to be impossible. He was on the borough bench of magistrates, had been president of the Margate Chamber of Commerce, and a valued member of the Rotary Club. During the war he may be said to have almost lived in the hospital when the younger men were necessarily absent, a devotion which was recognised by his election as President of the hospital, and in addition to his professional duties he found time to go into training, as an honorary captain, with the South Eastern Mounted Brigade, Field Ambulance, R.A.M.C. Dr. Nichol's death followed a considerable period of ill-health, though it occurred just as he returned to work. He married, in 1891, Annie Lilian Price, the daughter of Dr. William Price of Margate, who survives him, and by whom he had four children—three sons and one daughter. The second son was killed in the war, and the third died just after the war, while the eldest son, Dr. Robert Nichol, was a partner in the Margate practice. Dr. Nichol's daughter is married in Rhodesia.

ANDREA RABAGLIATI, M.D., F.R.C.S. Edin.

Dr. Rabagliati, who died at Ben Rhydding on Sunday in his eighty-eighth year, was one of the best known figures in Bradford for 50 years or more. His father was an officer in the Italian army, who sought refuge in Scotland after an unsuccessful revolt against Austrian rule. Capt. Rabagliati spent some time in the manse at Kelso, read Italian with Sir Walter Scott at Abbotsford, married a Highland lady and settled in Edinburgh, where Andrea Carlo Francisco was born in 1843. Andrea was educated at Edinburgh High School, went to a clerical uncle in Demerara for two years, and returned in 1862 to study medicine at Edinburgh University. He graduated with honours in arts in 1867 and in medicine in 1869, taking the M.D. three years later with gold medal for a thesis on relapsing fever. On graduating he went as assistant to Dr. Leeson, medical officer to the Bradford workhouse. At that time Bradford had less than half its present population and, as Dr. Rabagliati used to say, appeared to consist of a few employers and a large number of employed. After two years as house surgeon to the infirmary he began practice on his own account, soon becoming hon. surgeon to the infirmary, assistant surgeon to the Eye and Ear Hospital, and medical officer to the Fever Hospital. In conjunction with Dr. Burnie and Dr. Harry Meade he helped to found in 1882 the Children's Hospital in Hanover-square, which was the nucleus of the present hospital built and opened in 1890. He was instrumental in founding, with his wife's untiring help, St. Catherine's Home for Cancer, to which he was appointed consulting surgeon. He was also consultant to the Bingley Hospital, the Actors' and Music Hall Artistes' Associations, and consulting gynæcologist to the Bradford Royal Infirmary.

Although holding surgical appointments, Dr. Rabagliati's bias was always towards medical practice, especially on questions of diet. The publication of his numerous medical books brought him a large consulting practice on these lines, and he was frequently urged to confine himself entirely to such, but he believed he could do more good by the general care of patients, although latterly consulting work and ever-increasing correspondence left him time for little else. He continued to practise without intermission, taking but few holidays, from 1872 up to his eighty-seventh birthday in May, 1930, when he was first taken ill.

In 1877 Dr. Rabagliati married Helen Priscilla, youngest daughter of the late Duncan McLaren, M.P. for Edinburgh, by whom he had four sons and one daughter. His eldest son, who practised surgery in Natal and Nairobi, died last year. Another son is a veterinary surgeon.

Dr. Halliday Sutherland writes: "Dr. Rabagliati was remarkable alike for his character and ability. He lived beyond the allotted span, and early in his life had sacrificed a large practice by reason of his views

on diet, which were not then appreciated either by his colleagues or by the public. Yet he held these views to the end of a long life, and lived to see Guelpa, of Paris, introduce a method of detoxication based on principles in no way different to his own. By diet, or more accurately, by starvation, Dr. Rabagliati obtained many remarkable results in chronic ailments. As his views made headway, practice gradually returned, and even during the past year patients had come from America to consult him. He published several works which never made a wide appeal. This was partly due to the style in which they were written. They reminded one of the spacious days of Sydenham, when men wrote leisurely and at length. He had also a fondness for coining new words, based on Greek roots, which were rather puzzling to those without a classical education. His interest in medicine was maintained to the end, and what hurt him even more than the malady of which he died was the knowledge that it interfered with his practice. When the rôle of the lymphatic system in the causation of disease is better known Rabagliati will be remembered as a pioneer."

THE LATE DR. BILAND OF DAVOS.

Dr. J. Biland, who died in his sleep on Oct. 28th, had been medical director of the Davos Dorf Sanatorium since 1916, and was one of the directors of the Swiss Institute for Medical Research at Davos. Born in 1877, in the Canton of Glaris, he was educated at Neuchâtel and studied medicine at the Universities of Zürich and Berne. He was then, in succession, assistant to Kocher, at Berne, and Lichtheim, at Königsberg. He passed the Italian State examinations when he was in charge of the Sanatorium Ambri Piotta. At the outbreak of war he worked at a German Red Cross hospital with Dr. Bernhard, of Samaden. On his return to Switzerland he was appointed medical officer to the interned prisoners who were stationed at Davos, and a considerable number of British officers were sent to his sanatorium at Davos Dorf by the British Red Cross Society. Dr. Biland was an able and popular lung specialist who enjoyed the affectionate regard of patients of many nationalities. He spoke nearly all European languages fluently.

PANEL AND CONTRACT PRACTICE

"A Second Opinion."

THE question of how best to safeguard the funds of friendly and other sickness societies continues to occupy much space in their official review. The *National Insurance Gazette* published last week a further instalment of Sir Alfred Watson's address to the Institute of Actuaries, which dealt with the work of medical referees under the National Health insurance system.

"It would have been difficult," Sir Alfred said, "a few years ago to urge on friendly societies, with any success, the advantage of obtaining a 'second opinion' in cases of doubt as to the genuineness of incapacity, but in view of the establishment by the Ministry of Health of a corps of 'medical referees' to whose services there is a wide and growing resort by the approved societies, this instrument of control has become familiar, and the actuary who is called upon to deal with the consequences of a heavy rate of sickness should not find it difficult to press for its application in doubtful cases. It is, however, abundantly clear that friendly societies cannot afford, and probably never will be able to afford, to discard the additional weapon of defence with which the reduction of sickness benefit in protracted cases arms them."

Taking up this point in its editorial columns the *Gazette* remarks: "A good many societies, mainly those operating in a restricted area around their registered offices, can, with advantage, employ a medical officer of their own. This officer does what a sickness visitor does, and does it better. Claims are submitted to him on receipt, and within 48 hours he notifies the result of his investigation—perhaps verbally in the first instance (to save delay) but subsequently in writing, because documentary evidence will be required in the case of disputes. We know at least two societies which employ such medical officers—and with a very great saving to their funds. Obviously, there can be no better way of meeting the short duration claimant, who is such a menace."

Sickness Benefit on Tyneside.

At a recent meeting of the Newcastle-on-Tyne insurance committee it was reported that the 108,000 insured persons in the county borough shared 539,342 prescriptions, dispensed by panel chemists at a cost of £17,290, and incurred doctors' fees of £48,100. Anxiety was expressed in the committee at the increasing cost of sickness benefit. The panel committee has, however, made it clear that there is in their opinion no question of malingering. According to the *North Mail* a representative of this committee has said:—

"The increased cost is due in no small measure to the pressure of economic circumstances on insured persons, who formerly would not go to their panel doctor for free treatment, but preferred to consult another doctor and pay as private patients. That prejudice against the scheme has been broken down now. What is more, it is due in part to officials of approved societies who send their members to us to demand benefits to which they are not necessarily entitled. People are now thoroughly acquainted with the Act, and are seeking benefits of which formerly they had no knowledge. We claim that the actuarial calculation of sickness was wrong in the first place.

"The costs," he went on to say, "are not as heavy as they ought to be. Men receiving the dole draw the employment exchange benefits as long as they can, then come to us for a few weeks and get sickness benefits during the employment exchange 'waiting period,' and, when that is ended, they return to the dole. Those men are not malingerers. They are not getting anything they are not entitled to. They ought to be receiving sickness benefits all the time, and would be doing so if they could afford to sacrifice the dole, which is on a higher scale. They are not physically fit for work."

HOSPITAL ACCOMMODATION AT STOKE-ON-TRENT.—On Friday last Mr. Arthur Greenwood, the Minister of Health, laid the foundation-stone of extensions to the Hartshill Maternity Homes. The scheme is of considerable dimensions, but the immediate enlargements will comprise 60 beds and a new theatre. On the same day Mr. Greenwood opened a new cubicle block at the infectious diseases hospital at Bucknall, which has been erected by the Stoke-on-Trent City Council. The block, which has cost £5750, contains 12 single-bed cubicles. At present this hospital has 192 beds in 14 wards, and when the scheme of enlargement is completed there will be 282 beds.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

ACCIDENTS IN MINES.

IN the House of Commons on Wednesday, Dec. 3rd, Mr. SUTTON moved :—

That this House deplores the heavy loss of life and the large number of non-fatal accidents in coal mines and urges the Government to take every possible measure for the protection of those engaged in this dangerous industry.

He said that the number of deaths and accidents in the mines was increasing every year. H.M. Inspector of Mines in his report for 1929 stated that 985 persons working underground were killed, an increase of 100 over the previous year. The number injured underground was 162,230, or an increase of 13,098 on the previous year. The Secretary for Mines in reply to a question had stated that over 800 deaths had occurred in the mines during the ten months of 1930. A large number of committees had been inquiring into this matter for some years past, but not much progress had been made: in fact they seemed to be going back. In the report of His Majesty's Inspector for 1929 it was stated that there were 12,651 persons injured on the surface, or an increase of 837 as compared with the previous year. There were in the mines of this country 29,000 boys under 16 years of age working underground. Last year the number of boys under 16, according to figures given by the Chief Inspector of Mines, who were killed or injured was at the rate of 251 per 1000 boys employed. In the case of boys between 16 and 18 the rate was 230 per 1000, and of those between 18 and 20 223 per 1000. In the case of those aged 20 and over the rate was 209 per 1000, while for all ages it was 212 per 1000. He hoped the Secretary for Mines would make a note of these facts. During the past eight and a half years some 10,440 persons had been killed in the mines of this country, or an average of well over 1000 a year. In those eight and a half years 1,587,330 persons were injured in the mines, apart from the 10,440 who were killed. He earnestly appealed to the Government to investigate this matter very carefully, particularly as it affected the boys.

Mr. TINKER, in seconding the resolution, said that if the law was carried out with regard to ventilation in the mines many of the accidents would be prevented.

After further debate,

ASCERTAINMENT OF CAUSES.

Mr. SHINWELL (Secretary for Mines) said he was as anxious as any miner or any Member of the House to promote the well-being of the mining industry and the safety of the miners, and he desired as a line of approach to a solution of the safety problem to secure the coöperation of both sides of the industry, and to focus the attention not only of mining officials but of miners themselves on the various aspects of this problem, more particularly in relation to the proper observance of the regulations laid down by the Department. He did not question the figures which had been given in the debate. He was more than familiar with statistics relating to the mortality-rate among miners, and the remarkably high accident-rate. He was deeply concerned about the matter, particularly in view of the fact that in recent years he detected not a diminution, but an increase in the rate. Although progress had undoubtedly been made in the direction of promoting safety they could not regard the existing condition with complacency. He was far from complaining about the orthodox methods employed by the industry and his Department in recent years. They had all tended to promote greater safety, but relatively speaking they found in the official figures a higher accident-rate and a higher mortality-rate—much too high a rate in the circumstances. If they were to approach this problem with a view to finding as complete a solution as possible they must first ascertain the cause of the accidents. Recently in his spare time he had analysed the principal types of accidents occurring in the mines. He found that the majority of accidents occurred as a result of the fall of roof or side. The second main cause of accident, which applied also to the mortality-rate, was haulage. The third was due to explosions of coal dust or fire damp, and these were relatively low.

He was not concerned about defending what was now being done for the promotion of safety in the mines except to say that he believed considerable progress had been made, and that no complaint could be laid at the door of the Inspectorate of the Department. To find a remedy the first thing required was to secure the greatest measure of coöperation in the industry, and in that he had succeeded in some measure. As far as the employers were concerned there was every reason why they should coöperate. They paid in 1928 in compensation £3,026,678, and he understood that that was almost 50 per cent. of the total amount paid in workman's compensation in the seven great groups of industries in this country for which returns were obtained under the Act of 1925. That meant something like fourpence or fivepence a ton on coal, and when they spoke of the burdens resting on the coal industry they might consider that particular burden. The Miners' Federation had agreed to set up a subcommittee to act with officials of the Mines Department in the discussion of the problem. That subcommittee had already dealt with a variety of subjects. The Mining Association had responded most readily that they should coöperate in the discussion of the problem. They had set up a subcommittee, but only one meeting had been held to date. They had dealt with silicosis and other important matters. This coöperation between employers, the miners, and his Department would continue. He did not wish at this stage to press either side unduly in a direction of reaching decisions, although wherever the Department saw points of agreement they would utilise them.

ILLUMINATION AND NYSTAGMUS.

Sir HENRY BETTERTON: Are the non-ferrous mines like tin and lead represented, or only coal mines?

Mr. SHINWELL said they were dealing with coal mines alone, but he would be very happy if they requested him to give consideration to the non-ferrous mines. He thought it was desirable to have more education in relation to safety. There could be no doubt that one cause of accidents in mines was the familiarity with conditions. It was essential to promote greater care. It was impossible at this stage to promote further mining legislation. They had succeeded in taking a definite step in one particular direction—namely, the provision of more efficient illumination in the pits. So far as research had gone, although there was a difference of opinion, it was generally agreed that nystagmus cases were attributable to deficient lighting. It had been suggested that to some extent they might be due to the stooping posture adopted by miners and the gas in the pits. That might be so, but the bulk of scientific opinion on this subject held the view that inefficient lighting was the primary cause. Therefore they were devoting some attention to the question of better illumination. A Draft Order was to be submitted to the industry for their discussion, and he hoped their endorsement. These new proposals in relation to mine lighting aimed at a general improvement in the standard of lighting in three principal directions. First of all there was the raising of the minimum candle power standard of miners' safety lamps, not only the flame lamp but the electric lamp also. They proposed to provide a relaxation

in the present drastic statutory restriction upon methods of lighting other than safety lamps. That was full of difficulties, because there was a dispute as to whether the use of electricity in the pits was desirable. They also proposed to secure, if they could, definite provision for a reasonable standard of surface lighting which hitherto had not been regulated by law except for railway shunting operations. They also proposed to deal with the qualifications of colliery officials generally.

Instead of appointing new inspectors at this stage he thought it would be better to relieve the inspectorate of much of their present work which had no relation to safety at all. If he had his way he would prohibit the employment of boys in mines, certainly under the age of 16, but there were economic causes operating which could not be ignored. He hoped to consider very shortly the possibility of establishing some form of training for boys. In regard to research, last year there was spent out of the Miners' Welfare Fund by the Safety in Mines Research Board more than £50,000 in research. If he found by practical tests that the Ringrose, or any other gas detector, could be used to benefit the miners, and to secure greater safety in the mines of the country, either by a compulsory Order, or by inducing the owners to accept it voluntarily, he would certainly take action.

The resolution was agreed to without a division.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 3RD.

Tuberculosis in the Navy.

Mr. MARKHAM asked the First Lord of the Admiralty what number of engineer rating artificers and chief engineer rating artificers had been invalided out of the Service during 1930 owing to tuberculosis; and whether, seeing that three of them in H.M.S. *Rodney* had been invalided during the months of August to October, 1930, he could say whether the conditions on board were a contributory cause.—Mr. ALEXANDER replied: Two chief engine-room artificers, six engine-room artificers, and one apprentice engine-room artificer were invalided from the Service between Jan. 1st and Oct. 31st, 1930, on account of tuberculosis. Of these one case was of non-pulmonary tuberculosis. As regards the latter part of the question it is not considered that the conditions on board are a contributory cause, as returns received from the ship to date indicate that the general health of the ship's company is very good. Moreover, *Rodney*, one of our latest battleships, is constructed entirely in accordance with the most modern principles and ideas in regard to ventilation and hygiene.

THURSDAY, DEC. 4TH.

Training of Unemployed Women as Nurses.

Sir NICHOLAS GRATTAN-DOYLE asked the Minister of Labour how many women had availed themselves during the past 12 months of the special provision for the training of suitable unemployed women in domestic service, hospital and child nursing, and similar useful occupations, and what had been the result in terms of subsequent employment.—Miss BONDFIELD replied: The number of women and girls who, during the year ended Nov. 24th, 1930, entered training under schemes controlled by the Central Committee on Women's Training and Employment was 4501. During the same period 3635 trainees entered domestic or other work. The number in training on Nov. 29th last was 1168.

Local Authorities and Hospital Accommodation.

Mr. JAMES GARDNER asked the Minister of Health if he would furnish a return for the latest possible date of the numbers and beds, on the lines of the return given in the House of Commons on Dec. 12th, 1929, for hospitals provided by local authorities, with separate figures of institutions formerly provided by the poor-law authorities, voluntary hospitals aided by local authorities, and unaided voluntary hospitals, giving, if possible, expenditure in each class.—Mr. GREENWOOD replied: The table shows the position at March 31st, 1930, with the exception of hospitals for acute infectious diseases for which the latest available figures relate to Dec. 31st, 1929. So far as general hospitals are concerned, the information in my Department is that one large general hospital, with 875 beds, and three relatively small accident hospitals were provided by local authorities at March 31st last. Since that date 17 hospitals, with approximately 12,500 beds, which were provided under the Poor Law Acts, have been appropriated as general hospitals under the Public Health Acts, but the expenditure on these hospitals for the year 1928–29 is included in Part *c* of the table below. There are also three poor-law institutions or infirmaries of which parts only have been appropriated as general hospitals. The number of beds in the appropriated parts is not known. Subscriptions or donations made by local authorities in pursuance of Section 64 of the Public Health Act, 1925, amounted in 1928–29 to £30,000. Contributions made by boards of guardians to public hospitals with the consent of the Minister of Health, in pursuance of Section 38 of the Poor Law Act, 1927, amounted in 1928–29 to £38,000.

The information with regard to hospitals of the other classes in England and Wales referred to in the question is as follows:—

(a) Hospitals provided by Local Authorities.

	Number.	Beds.	Expend. 1928–29.‡
(1) For tuberculosis	166	12,804	£1,865,000*
(2) For acute infectious diseases	987†	36,635†	£3,620,000†
(3) Maternity hospitals (not including maternity wards in general hospitals or poor-law institutions)	80	1040	£268,000§
(4) Babies' hospitals	9	233	

* Including the expenditure in connexion with beds for tuberculosis mentioned in the following note. † At 44 of these hospitals there are 2200 beds for the treatment of tuberculosis. The expenditure on these beds is excluded from item (2). ‡ Expenditure (in round figures) of local authorities in 1928-29. § Including expenditure in respect of maternity sections in general hospitals, and payments to homes for unmarried mothers and their babies, which cannot be separated.

(b) Voluntary Hospitals aided by Local Authorities.

	Number.	Beds.	Expend. 1928–29.‡
(1) Tuberculosis hospitals	139	9298	£821,000¶
(2) General hospitals—			
(*a*) Used in connexion with tuberculosis schemes	166	—‖	
(*b*) Used in connexion with venereal diseases schemes	130	—‖	Not av.
(*c*) Maternity sections used in connexion with maternity and child welfare schemes	26	279	
(3) Maternity hospitals (not including maternity sections in general hospitals)	64	1337	£114,000§
(4) Babies' hospitals	14	347	

‖ Available beds used as and when required. ¶ Including expenditure of the Welsh National Memorial Association on sanatoria and hospitals.

Not av. = Not available.

The figures under the above headings as to numbers of hospitals and beds are exclusive of accommodation in homes for unmarried mothers and their babies, observation wards in connexion with maternity and child welfare centres, and convalescent homes. Those under *b* (2) (*c*) are exclusive of accommodation used by local authorities in general hospitals for special or complicated maternity cases, as regards which figures are not available.

(c) Institutions formerly provided by Poor-law Authorities.

	Number.	Beds.	Expend. 1928–29.‡
(1) Institutions wholly for the sick, exclusive of institutions for mental cases	73	40,000	£4,316,000
(2) General institutions (with a total accommodation of some 188,000)	652	83,000(*a*)	£8,880,000(*b*)

(*a*) Beds in infirm and sick wards.
(*b*) Total expenditure on general institutions.

Cancer among Aniline Factory Workers.

Mr. PHILIP OLIVER asked the Home Secretary whether he was now in a position to report on the investigation being carried out by the London Cancer Hospital, with the assistance of the medical inspectorate of the factory department, into the incidence of the disease of cancer of the bladder among workers in aniline factories.—Mr. SHORT replied: This investigation has been continued, but I am unable to hazard any opinion as to when conclusive results may be expected. The hon. Member will appreciate that investigations into the causation of cancer in connexion with particular occupations are always very difficult, and that a special difficulty arises in the present investigation owing to the fact that the total number of fatalities from cancer of the bladder among aniline workers is quite small, and the collection of data, therefore, very laborious.

Manufacture of Dangerous Drugs.

Lieut.-Colonel FREMANTLE asked the Home Secretary when the report of the preliminary conference on the limitation of manufacture of dangerous drugs, recently held in this country, would be available to Members of Parliament.—Mr. SHORT replied: The report of this meeting of Government representatives from the manufacturing countries, which was one of the stages in the working out of the League scheme for the limitation of the manufacture of dangerous drugs, has been sent to the League, and, I am informed, is now in course of being printed. I am afraid I cannot say how soon copies will be available.

Mentally Defective Children.

Mr. DAY asked the President of the Board of Education the number of children in England and Wales between the ages of 5 and 16 who were ascertained by the education authorities to be mentally deficient; the number of these who were ascertained to be educable; the number who were ascertained to be ineducable; the number of such children who were attending schools, institutions, and other centres; and were there any statistics that would show the number receiving home training.—Sir CHARLES TREVELYAN replied: According to the latest returns available, 32,775 educable mentally defective children have been ascertained by local education authorities in England and Wales; of these, 28,598 were attending schools or other institutions. I am afraid that I am unable to give figures for ineducable children on a comparable basis, but I am informed that the names of 3274 children were notified to local authorities under the Mental Deficiency Acts during the year 1929, of whom 352 were sent to institutions.

Wrapping of Cheese in Tinfoil.

Sir CHARLES CAYZER asked the Minister of Health whether the warning conveyed in the annual report of the Ministry of Health as to the potential danger of the practice of wrapping cheeses in tinfoil was based on a report of an official analyst of the Ministry; and whether the samples examined were of British or of foreign origin.—Mr. GREENWOOD replied: The report quoted was that of a public analyst appointed by a local authority. The appointment of such an officer is subject to the approval of my department, who require to be satisfied as to the competence of the person appointed. I understand that some of the samples examined were British, and that some were imported.

Sir C. CAYZER: Does not the right hon. gentleman consider that a grave warning of this kind based on such slender evidence is calculated to do a great deal of harm to an important industry?

Mr. GREENWOOD: I do not accept the hon. Member's suggestion that there is slender evidence. A distinguished public analyst has said that in certain cases food was contaminated.

Infant Mortality.

Lieut.-Colonel FREMANTLE asked the Minister of Health the main reason for the increase in infant mortality in England and Wales in the years 1924 and 1929 respectively.—Mr. GREENWOOD replied: I am advised that the increase in 1924 was mainly due to an epidemic of influenza, and in 1929 to a similar epidemic coupled with an epidemic of whooping-cough.

TUESDAY, DEC. 9TH.

Education of Mental Defectives in Scotland.

Mr. TRAIN asked the Secretary of State for Scotland how many educable mental defectives in Scotland were receiving suitable education; what were the size and number of the classes; and what was the total expenditure.—Mr. JOHNSTON (Under-Secretary for Scotland) replied: The number of educable mentally defective children between 5 and 16 years of age receiving instruction in special schools, classes and residential institutions in Scotland is 3938. I am unable to state the precise number of the classes, but the number of children in a class is limited to 20. The statistical information available does not enable me to separate the expenditure on such instruction from the other expenditure of the education authorities.

X Ray Examination and Tuberculosis.

Dr. HASTINGS asked the Minister of Health the proportion of cases treated in dispensaries for the prevention of tuberculosis in which the diagnosis of pulmonary tuberculosis was confirmed by X ray examination.—Mr. GREENWOOD replied: The number of X ray examinations made in 1929 for every 100 new cases and contacts who were examined in tuberculosis dispensaries in England and Wales was slightly over 25. I have no information as to how many of these examinations resulted in the confirmation of a diagnosis.

Dr. HASTINGS asked the Minister of Health to what extent facilities for the X ray examination of the chest were at the service of medical officers in charge of dispensaries for the prevention of tuberculosis.—Mr. GREENWOOD replied: Definite arrangements for X ray examination have been made by 122 out of 140 tuberculosis authorities in England and Wales, and by all the metropolitan borough councils. Other tuberculosis authorities have from time to time provided X ray examinations for particular cases.

Relief of Sick Poor in Scotland.

Mr. KIRKWOOD asked the Secretary for Scotland whether, in view of the hardship now existing among the unemployed and sick poor in the face of the cold weather and the cost of fuel, he would circularise the local authorities, asking them to increase the payments in respect of relief and particularly to make an increase during the Christmas and New Year weeks.—Mr. JOHNSTON replied: My right hon. friend is advised that any such recommendation as is suggested in the question is outside his statutory powers. Under the Scottish poor-law an authority is required to grant needful assistance for the maintenance of health. But subject to this statutory limitation the Department of Health have always agreed to a variation from the approved dietary in poor-houses at Christmas or the New Year.

Small-pox and Vaccination.

Mr. GROVES asked the Minister of Health whether he had any reason to believe that the mild form of small-pox which had been prevalent in certain districts of this country during the past eight years had shown any greater incidence in those counties in which vaccination had been largely neglected as compared with those counties in which the practice had been more largely observed; and, if so, would he supply statistical data in support of his view.—Mr. GREENWOOD replied: I have no specific evidence that the incidence in any area of the type of small-pox at present prevalent in this country bears any close relation to the percentage of infants vaccinated in that area. The incidence of the disease is, however, almost entirely limited to unvaccinated persons or persons who have not been successfully vaccinated within recent years.

Post-vaccinal Encephalitis.

Mr. GROVES asked the Minister of Health how many cases of post-vaccinal encephalitis were brought to the notice of his department during the 12 months Oct. 1st, 1929, to Sept. 30th, 1930; how many proved fatal; and which of the cases, if any, were vaccinated with Government lymph.—Mr. GREENWOOD replied: Fourteen cases in which symptoms suggestive of disease of the central nervous system following within a month of vaccination have been brought to the notice of my Department as having occurred during the 12 months ended Sept. 30th, 1930. I am advised that eight of these cases, four of which proved fatal, may be regarded as cases of post-vaccinal encephalitis. Of these eight cases, seven were vaccinated with Government lymph, and in one case there is no information as to the lymph used.

The Schick Test.

Mr. FREEMAN asked the Minister of Health whether he had information regarding the towns in which Schick testing and diphtheria immunisation were being practised; and whether he could state the number of children in those towns that had been Schick tested and had received one, two, or three immunisation inoculations for each year separately.—Mr. GREENWOOD replied: I have sanctioned the provision of facilities for Schick testing and immunisation against diphtheria in 38 districts in England and two in Wales, and I have information that these facilities are also provided in other areas. The information asked for in the second part of the question is not available.

Chemical Warfare Research.

Mr. R. S. YOUNG asked the Secretary for War if he could give the total number of the staff of the chemical warfare department, and give the figures for 1920, 1925, and 1929 respectively.—Mr. T. SHAW replied: The total number of staff on the approved establishment of the chemical warfare research department on April 1st of the respective years is given below: 1920, 410; 1925, 480; 1929, 535; 1930, 553. The figures for 1920 exclude the staff of the Research Establishment, Sutton Oak, as in 1920 that establishment was under the Ministry of Munitions and figures are not available.

Mr. SINKINSON asked the Secretary for War how many horses had actually been killed by poison-gas experiments at Porton each year since the cessation of the great war.—Mr. T. SHAW replied: None, Sir.

MEDICAL SERVICE PROBLEMS IN AMERICA.

(BY A SPECIAL CORRESPONDENT.)

FOR some time past in America, more perhaps than in most countries, public attention has been increasingly directed to the great question of the promotion of the health of the people. In the press health topics have considerable "news value"; health talks form a popular feature in radio programmes, and there is force in the statement that is sometimes made that America has become "health conscious." Prominent among the problems that are now being most widely discussed is that of securing at a moderate cost an adequate provision of medical services to the entire population; and in the issue of the *Ohio State Medical Journal* of Sept. 30th there is a thoughtful and illuminating discussion of this problem by Dr. Willard C. Rappleye, the Director of Study of the Commission on Medical Education, whose report on "Medical Education in Europe" was reviewed not long ago in our columns.[1]

EXPENDITURE ON MEDICAL CARE.

Dr. Rappleye begins by giving a remarkable estimate of the direct expenditure on medical care in the United States, which he takes to be rather more than 2 per cent. of the annual national income. His figures are as follows:—

	In millions of dollars.	Per family. Dollars.
Patent medicines and drugs	700	25.00
Physicians	650	24.00
Hospitals (civil)	380	15.00
Nursing (all forms)	200	8.00
Dentists	150	6.00
Non-medical practitioners	50	2.00
Total	2130	80.00

The costs are contrasted with other forms of national expenditure, namely:—

	In millions of dollars.	Per family. Dollars.
Passenger automobiles	4,000	150.00
Tobacco	1,800	67.00
Candy	1,000	37.00
Gasoline (non-commercial)	1,000	37.00
Movies, entertainment	930	35.00
Soft drinks, ice-cream, gum	910	34.00
Jewellery and furs	780	29.00
Radios and musical instruments	440	16.00
Sporting goods, toys, games	430	16.00
Perfumes, cosmetics, toilet soap	410	15.00
Total	11,700	436.00

These figures would appear to show that the American people spend far less on doctors than on candy, and twice as much on perfumes, cosmetics, and toilet soap as on nursing; and they support Dr. Rappleye's suggestion that the obstacles in the way of providing complete medical services for the population lie not so much in economic facts as in the difficulty of devising a plan of medical provision that would meet with general acceptance. Given such a plan, the funds necessary for its operation could be found.

NATIONAL INSURANCE.

The consideration of the question naturally leads to an examination of the various schemes of national insurance against sickness that have been adopted in Europe; but these do not meet with favour in America. By the doctors State sickness insurance is regarded as a measure of "State medicine," to which the American medical profession is strongly opposed. To the ordinary citizen it savours of "paternalistic" government, and "paternalism" is held to be out of harmony with the American philosophy of life, although to the European observer the institution of prohibition on a national scale seems inconsistent with this view. The present indications certainly seem to suggest that it is not by the adoption of national health insurance based on European methods of compulsory insurance that the solution of the American problems will be attempted.

Moreover, State sickness insurance as we know it in Europe is limited to the wage-earning class and to the small-salaried employees, while the problem to be faced extends over a considerably wider area. Between the insured persons on the one hand, and those members of the community who are fortunate enough to be in a position to pay for all the medical services necessary for complete treatment on the other, there is a large class of potential patients who, while able to pay an ordinary doctor's bill, cannot afford the expenses of a major operation or of a protracted illness. To such persons the economic effects of severe sickness may be devastating; and the cost to them of adequate treatment tends continually to increase with the modern development of specialism and of the increasing recognition of the importance of team work as a condition of the successful attack upon disease. For the great majority of the community sufficient provision against sickness cannot be made by individual effort, and it would seem that some form of spreading the risk by communal action must be found.

VARIOUS EXPEDIENTS.

Various suggestions have been put forward for overcoming the difficulties inherent in the problem as it is now viewed in America, and various expedients are being adopted. There has been a great increase in the provision of hospitals and clinics. Many industries are establishing comprehensive medical services, some on a local insurance basis; and by some students of the problem it is thought that developments on these lines hold out the most likely prospects of successful results. There has been a rapid expansion of the "community chest" movement, this term being used to denote a scheme of voluntary taxation for the purpose, inter alia, of providing medical services. Dr. Rappleye states that over 350 American cities now have "community chests," and that in the year 1929 more than $50,000,000 was raised by them for various forms of social and medical relief. Progress has recently been made, especially in the Middle West, in what is known as "group practice"—i.e., the voluntary combination of a number of doctors, generally from 10 to 20—to offer a more or less complete medical service. Some groups have even provided a hospital for the treatment of their patients.

Dr. Rappleye suggests that in the solution of the problem it is up to the medical profession to take a prominent part, and he indicates various directions in which effort may most usefully be made. One lies in the devotion of increased attention to the preventive side of medical work—the making of preventive medicine an integral part of medical practice. Another is the more economical use of specialist services. He estimates that between 80 and 90 per cent. of medical needs can be met by adequately trained general practitioners; and he contends that the selection of cases for specialist advise should be made by the practitioner and not by the patient, and that the profession should devise means to furnish the public with some guarantee that those who claim

[1] THE LANCET, 1930, i., 1412; and ii., 141.

to be specialists are, in fact, expert in their particular fields of practice. Another element in the solution of the problem is the systematic development of post-graduate study.

Dr. Rappleye concludes by laying stress upon the importance of leadership in the medical profession. "What we need," he says, "is a constructive and sustained programme directed and supported by the best brains of the medical profession, which will aim to provide, control, and retain leadership in health matters, and in the programme of medical services, through proper organisation of the profession, sound schemes of medical and post-graduate education, and wise constructive policy and publicity."

MEDICAL NEWS

University of Cambridge.

On Dec. 5th the following degrees were conferred :—

M.D.—W. H. Craib.

M.B. & B.Chir.—R. W. L. May, A. R. Banham, R. M. Bolam, and Stuart McDonald.

The Raymond Horton-Smith prize for 1929–30 has been awarded to Dr. P. M. D'A. Hart.

University of Bristol.

At recent examinations the following candidates were successful :—

M.D.—T A. Brand.

FINAL EXAMINATION FOR M.B. AND CH.B.

Part I. (including Forensic Medicine and Toxicology).—G. T. Bevir, R. N. O'D. Burns, R. G. C. G. Carlson, A. McD. Davies, G. M. Evans, A. L. Eyre-Brook, F. E. Fletcher, J. D. Hughes, Harold James, John Ridgway, Frances N. Salisbury, O. E. L. Sampson, and J. P. P. Stock.

Part I.—J. R. Gibbs.

Section II (Group I.).—Eveline M. D. M. Collinson and Rowena M. Hickman.

FINAL EXAMINATION FOR L.D.S.—E. R. Carpenter.

University of Liverpool.

The Council have appointed Dr. H. J. Channon to the Johnston Chair of Biochemistry, vacated by the resignation of Prof. Ramsden. Dr. Channon, a former Beit Memorial Fellow, is at present in the department of Experimental Pathology and Cancer Research at the University of Leeds.

Dr. H. E. Annett, late professor of comparative pathology, has been appointed to the Samuel Turner Research Fellowship.—Mr. J. S. Collinge, L.D.S., has been appointed lecturer in Operative Dental Surgery in the place of Mr. H. W. P. Bennette, resigned.

Royal College of Physicians of Edinburgh.

At the annual meeting of the College on Dec. 4th Sir Norman Walker was re-elected President for the ensuing year. Dr. Robert A. Fleming, Dr. Robert Thin, Dr. William Fordyce, Dr. Edwin Bramwell, Dr. Edwin Matthew, and Dr. A. Fergus Hewat were elected members of Council, and Dr. Robert Thin was nominated vice-president. At an extraordinary meeting held at the close of the annual meeting Dr. John Orr and Dr. William Fordyce were elected representatives on the board of management of the Royal Infirmary. The College voted a sum of 1000 guineas to the Royal Infirmary, Edinburgh, in response to its bicentenary appeal.

Hunterian Society of London.

The next award of the Hunterian Society's medal will be made in 1932. The object of the award is to encourage individual effort among general practitioners in advancing the science and art of medicine. The competition is open to all general practitioners resident in Great Britain, Ireland, and the Channel Islands, whether Fellows of the society or not. The medal will be given for the best essay on some subject, chosen by the candidate, from the province of medicine, surgery, and midwifery. Essays must be received on or before Dec. 31st, 1931. The rules governing the award may be obtained on application to the hon. secretaries: Dr. D. C. Norris, 14, City-road, London, E.C.; and Mr. Andrew McAllister, 79, Wimpole-street, W. 1.

Medical Benevolent Fund Guild.

The Father Christmas Branch of the Guild, over which Lady Tweedy presides, is issuing a special appeal to enable the Guild to make Christmas gifts to annuitants and necessitous grantees, thus making a small attempt to cheer the lot of those who have fallen on evil times. A similar effort has been made in past years but the needs are always greater than the money received, and a warning to this effect will be timely. Many doctors, their wives and their children subscribe to the Branch, and give pleasure to a large number by so doing, but more 5*s.* and 3*s.* subscriptions are needed, as well as gifts in kind. We call attention to the Branch in the hope that the distributors may receive promptly some assistance in their labour of kindness. The honorary treasurer is Miss Swinford Edwards, 68, Grosvenor-street, London, W. 1.

King George Hospital, Ilford.

On Thursday last week, Prince George presided at the "foundation dinner" of this hospital at Carpenters' Hall, and at the end it was announced that the building fund amounted to £107,000.

Hospital for Sick Children.

Sir James Barrie last week took the chair at a festival dinner at the Guildhall in support of the appeal for the reconstruction of the new Hospital for Sick Children in Great Ormond-street. After the dinner donations amounting to £40,568 were announced.

London (Royal Free Hospital) School of Medicine for Women: Annual Dinner.

Former students of the school, as usual, showed their confidence in the successful organisation of this annual function by bringing many guests to dine, to listen to short apt speeches, and then to dance. A party of more than 400 assembled punctually and stayed late, though, or possibly because, the formal proceedings were soon completed. After the loyal toasts, Mr. St. John Ervine, in proposing the School and Hospital, confessed to two errors, both of which that evening had done much to remove: an infantile fear of medical students and an entire misconception of the educated woman. His claim that the theatrical profession had the honour of being the pioneer of equality between men and women was conceded with applause. He sympathised with the practising doctor in his task of tinkering up such an inconvenient machine for its purpose as the human body, and expressed a flattering conviction that any good doctor, assisted by a competent engineer, would have made a better job of it. Speaking of the loss to the school of Dame Mary Scharlieb, Mr. Ervine recalled her unusual qualities, which caused her to inspire in the young as much affection for herself as she felt for them.

Mr. Malcolm Henderson, the chairman, responding to this toast, announced that the association between the Royal Free Hospital and the London School of Medicine for Women had recently been cemented by an agreement extending over the next 50 years. The entry of students to the school had, in recent times, not only been maintained, but had actually increased. During his long connexion with the school the buildings had had to be extended to double their size. He felt honoured to have been privileged to work with the women to whose courage and wisdom this development had been due.

Mr. L. E. C. Norbury, F.R.C.S., in terms of cordial welcome, proposed the guests. These included, besides Mr. Ervine, Lord Moynihan, P.R.C.S., Mrs. Kinnell, the Chairman of the Appeal Committee, Miss Jebb, the Principal of Bedford College, and the Editors of the *British Medical Journal* and *The Lancet*.

Mrs. Kinnell, in reply, said that it was always a pleasure to her to be associated with the school and the hospital either in work or in play; they brought to all their enterprise a stimulating vigour, kindliness, helpfulness, and self-helpfulness. Some weeks ago, Mr. Baldwin, when speaking at the Girton College Extension Dinner, had noted the disabilities under which the Women's Colleges did their work in the general life of the University. On the material side he regretted for them the lack of beautiful collegiate buildings, old chapels, and rich endowments; but he regretted also on the immaterial side the lack of the great tradition which it is the privilege of the sons and brothers of the race to inherit and to maintain. Mrs. Kinnell held that there was something better in life than inheriting a great tradition, and that was creating one.

Lord Moynihan spoke of the special place of women in medicine; he welcomed the increasing number of women taking up laboratory work, for which he deemed them exceptionally well fitted.

The last toast, that of the chairman, was proposed by Miss Waller, B.Sc. She spoke of the great services rendered to the school over a period of 35 years by the firm of solicitors to which Mr. Henderson belonged. He had inherited from his father a keen interest in its progress and had always been one of its most staunch friends and supporters.

Extension of St. Bartholomew's Hospital, Rochester.

The Rev. J. Bailey, the Prior, recently dedicated the new out-patients' department, which has cost £20,000. The ceremony marked the completion of the first part of a comprehensive scheme of extension, the cost of which will exceed £100,000. The new buildings include an operating theatre for casualties and minor cases.

An Indian Hospital for London.

The Indian Medical Association (Great Britain) is promoting a scheme for the establishment of an Indian hospital in London, with the support of a number of delegates to the Round-Table Conference and Indian medical men in England. It is proposed that the hospital should be started with 40 beds. Indian post-graduates would be provided with house appointments, facilities would be given to Indian doctors for research and specialisation, and a centre of training as nurses to Indian women created. The initial capital cost is estimated at £12,500, and the annual expenses for the first few years at about £4500.

Appointments

CHAMINGS, R. E., L.R.C.P. Lond., M.R.C.S., has been appointed House Surgeon, Nuneaton General Hospital.

LLOYD, R., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for Southminster, Essex.

LUFKIN, D. M., L.R.C.P. Lond., M.R.C.S., House Surgeon, Birmingham Children's Hospital.

REEKIE, M., M.B., Ch.B. Manch., Asst. Medical Officer of Health, Bromley, Kent.

STEWART, W. A. MCEWAN, L.R.C.P., F.R.C.S. Edin., L.R.F.P.S. Glasg., County Medical Officer for Essex.

Westminster Hospital: DAVIES, E. T., L.R.C.P. Lond., M.R.C.S., and STEWART, J. G., L.R.C.P. Lond., M.R.C.S., Resident House Surgeons. GOULDENBACH, L. M. A., L.R.C.P. Lond., M.R.C.S., and BUCK, G. H., L.R.C.P. Lond., M.R.C.S., Resident House Physicians.

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Jun. Ophth. Surgeon.

All Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road.—H.S. At rate of £150.

Birkenhead General Hospital.—Sen. H.S. £150.

Bradford Royal Infirmary.—Hon. Surg. Also Hon. Asst. Surg.

Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.

Bristol, Hortham Colony for Mental Defectives.—Med. Supt. £700.

Bristol General Hospital.—H.P.'s, H.S.'s, Res. Obstet. O. Each at rate of £80. Also Cas. H.S. At rate of £100.

Burnley, Victoria Hospital.—Two H.S.'s. Each at rate of £150.

Bury Infirmary, Lancashire.—Third H.S. At rate of £150.

Carlisle, Cumberland, and Westmorland Mental Hospital, Garlands.—Jun. Asst. M.O. £350.

Connaught Hospital, Orford-road, Walthamstow, E.—Sen. Res. H.S. At rate of £150.

Croydon General Hospital.—Hon. Physician to Children's Dept.

Derbyshire Royal Infirmary.—Non.-Res. Radiologist. £100.

Derby County Mental Hospital, Mickleover.—Jun. Asst. M.O. £350.

Dublin, Mercer's Hospital.—Hon. Asst. Visiting Surgeon. Also Hon. Jun. Anæsthetist.

Dudley, Guest Hospital.—H.S. £170.

Durham County Hospital.—Two Res. H.S.'s. Each £160.

Essex County Council.—Asst. County M.O.H. £500–£600.

Evelina Hospital for Children, Southwark, S.E.—Hon. Dental Surg.

Exeter, Royal Devon and Exeter Hospital, Pathological Department.—Pathologist. £500.

Glasgow University.—St. Mungo (Notman) Chair of Pathology.

Harrogate Infirmary.—Sen. and Jun. H.S.'s. At rate of £150 and £125 respectively.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, St. John's Wood, N.W.—Gynæc. Surg. Also Radiologist.

Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150.

Huddersfield Royal Infirmary.—H.S. At rate of £150.

Hull Royal Infirmary, Sutton Branch.—H.P. At rate of £160.

Hull Royal Infirmary.—2nd H.S., 3rd H.S. And H.S. to Ophth., &c. Depts. Each at rate of £150. Also Cas. H.S. At rate of £130.

Ilford, King George Hospital.—Hon. Physician.

Indian Medical Service.—Commissions.

Inverness Royal Northern Infirmary.—H.P. At rate of £100.

Leeds City Sanatorium, Killingbeck.—Med. Supt. £850.

Leicester Royal Infirmary.—Hon. Physician. Hon. Asst. Physician. Also Res. H.P. At rate of £125.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.

Manchester, Ancoats Hospital.—H.S. for General Surgery, &c. At rate of £100.

Manchester Royal Infirmary.—Asst. Res. Surg. O. At rate of £150.

Manchester Royal Infirmary, Central Branch, Roby-street.—H.S. £100.

Metropolitan Hospital, Kingsland-road, E.—Asst. M.O. to X Ray Dept.

National Hospital, Queen-square.—Hon. Surg. Asst. Also Hon. Asst. Surg.

Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. H.S. At rate of £100.

Pontefract General Infirmary.—H.S. £150.

Poplar Hospital for Accidents, East India Dock-road, E.—Sen. Res. O., &c. £200 plus £75.

Reading, Royal Berkshire Hospital.—H.P., H.S., and Cas O. All at rate of £150.

Royal Waterloo Hospital for Children and Women.—Res. H.S. At rate of £100.

St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, City-road, E.C.—H.S. At rate of £75.

St. Peter's Hospital for Stone, &c., Covent Garden, W.C.—Clin. Assts.

Salford Royal Hospital.—Cas. H.S. At rate of £125.

Sheffield Royal Infirmary.—Ophth. H.S. £80–£100. H.P., H.S., Asst. Aural and Ophth. H.S. Also Asst. Cas. O. All at rate of £80.

South London Hospital for Women, South Side, Clapham, S.W.—Three H.S.'s. Each at rate of £100. Also Asst. S. to Ear, Nose, and Throat Dept.

South Shields, Harton Hospital.—X Ray and U.V.R. Operator. £250.

Southampton, Royal South Hants and Southampton Hospital.—Sen. H.S. £225. Also H.P., and Two Asst. H.S.'s. Each at rate of £180.

Southampton, Royal Eye Hospital.—H.S. £150.

Sutton, Surrey, Sutton and Cheam Hospital.—Hon. Acting Surg.

Swansea County Borough.—Asst. M.O. £600.

Swansea General and Eye Hospital.—H.P. £150.

Torquay, Torbay Hospital.—H.P. £175.

Warwick, King Edward VII. Memorial Sanatorium, Hertford Hill.—Sen. Asst. M.O. £275.

Walsall General Hospital.—H.S. At rate of £150.

Watford, Herts, Peace Memorial Hospital.—Res. Surg. O. At rate of £150.

West African Medical Service.—Medical Officers.

Weston-Super-Mare General Hospital.—Res. H.S. At rate of £150.

Wigan Royal Infirmary.—H.S. At rate of £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Hackney (London).

Births, Marriages, and Deaths

BIRTHS.

CORMACK.—At the Dufferin Hospital, Rangoon, on Friday, Nov. 7th, to Dorothy, wife of Lt.-Col. H. S. Cormack, I.M.S.—a son.

HAYCRAFT.—On Dec. 4th, at Cathedral-road, Cardiff, the wife of John Berry Haycraft, *M.C.*, F.R.C.S., of a daughter.

LYDON.—On Dec. 3rd, at Galway House, Shire Green, Sheffield, to Helen Anderson, M.B., Ch.B., wife of F. L. Lydon, M.B., Ch.B.—a son.

MADGWICK.—On Dec. 2nd, to Adèle Hope, M.B., B.S., the wife of John R. A. Madgwick, M.B., B.S.—a son.

WELLS.—On Dec. 5th, at Barrington Hall, Cambridge, the wife of Dr. Arthur Q. Wells, of a daughter.

WHITEHEAD.—On Dec. 1st, at York-mansions, S.W., the wife of Major N. T. Whitehead, R.A.M.C., of a daughter.

WILSON.—On Nov. 22nd, at Carisbrooke, Plymouth, to Vera, wife of Edric F. Wilson, F.R.C.S. Eng.—a daughter.

MARRIAGES.

GRAY—GADSDON.—On Dec. 2nd, at Colchester, George Milne Gray, F.R.C.S., to Philippa Jeanne, daughter of Mr. and Mrs. H. P. Gadsdon, of Clacton.

LOVE—LAMBERT.—On Nov. 29th, at St. Mary's, Snettisham, King's Lynn, William Griffith Love, M.B., of Woodville, Burton-on-Trent, to Peggy, eldest daughter of Ernest W. Lambert, of Sutton Lea, Snettisham.

WILLIS—WHITTET.—On Dec. 4th, at Braid Church, Edinburgh, William Elliott Willis, M.B., Ch.B., to Mary Margaret, daughter of the late H. F. Whittet, solicitor, and Mrs. Whittet, Comiston-road, Edinburgh.

DEATHS.

BAILY.—On Dec. 4th, at La Forêt, Cannes, A.M., Edwin Baily, M.B., C.M., M.B.E., late of Oban, Argyll.

BENNETT.—On Dec. 3rd, at Regent-road, Leicester, Frederick William Bennett, M.D., B.Sc., aged 70.

BRIMACOMBE.—On Dec. 5th, at Tunbridge Wells, Richard William Brimacombe, T.D., M.D., late Lieut.-Colonel, R.A.M.C.

FOWLER.—On Dec. 1st, at College-road, Hampstead, N.W., Trevor Hayman Fowler, M.R.C.S., L.R.C.P., late Captain, R.A.M.C.

HAMMOND.—On Dec. 1st, John Balding Abbott Hammond, M.B. Lond., of Cleveland-gardens, W., and formerly of Shanklin, I.O.W., aged 54.

HERDMAN.—On Dec. 6th, very suddenly, Ronald Tydd Herdman, M.D.

KILNER.—On Dec. 1st, at the Old Mill House, Bury St. Edmunds, Charles Scott Kilner, M.B.E., M.B., B.Ch., D.P.H., J.P.

PRITCHARD.—On Nov. 27th, suddenly, at Heathfield, Dewsbury, Joseph James Gawler Pritchard, M.R.C.S., L.R.C.P., aged 66 years.

SECCOMBE.—On Dec. 4th, at Chester-place, Regent's Park, N.W., Philip John Ambrose Seccombe, M.B., aged 61.

TODD.—On Monday, Dec. 1st, 1930, William Alexander Todd, M.B., Ch.B., Medical Superintendent of Killingbeck Sanatorium.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

A HISTORY OF MEDICINE IN MASSACHUSETTS.

IT is no easy task to compress 300 years of medical history into less than 200 pages, and to make a readable book. Dr. Viets deserves congratulation, for his book [1] is really interesting and should make a wide appeal. A brief introduction shows that the chief element in medicine to be transferred to America, in 1620, was the widespread belief in Galenic principles, tinged with the then heterodox views of Paracelsus, Vesalius, and the giants of the Renaissance. Two men with medical knowledge, Deacon Dr. Samuel Fuller and Giles Heale, a barber-surgeon, were passengers on the *Mayflower*. Heale returned in that ship in 1621. Fuller stayed in New England, and died of small-pox in 1638. His third wife practised as a midwife. The early history of medicine in America is largely bound up with theology. Governor Winthrop found time to practise physic in addition to his other activities; especially interesting is the transcript of the letter written by him in 1652, dealing with a case of paralysis in a child. Thomas Thacher printed, in 1677, a broadsheet, epitomising Sydenham's views on the small-pox. John Clark, the first regular medical man in New England, arrived in 1638, and was the progenitor of a long line of physicians, seven in number and all named John, the last of whom died in 1805.

It is interesting to note that attempts at prevention were quickly to the fore, a strict quarantine being established at Boston by 1648 over all vessels arriving at the port. Conditions of life in this early colonial period were very hard, as were also conditions of practice if we may judge from the story of a barber-surgeon, named Dinely, who, while journeying to Roxbury to pull a tooth, was lost in a snow-drift. It was some days before his body was found and his widow, in her grief, fell into premature labour, and on the baby being born, insisted on saddling it with the name of Fathergone Dinely.

The chapter on the colonial period is followed by one on the first 75 years of the eighteenth century, culminating with the war of Independence. Boylston's inoculations in and after 1721 are the most interesting part of his chapter, and it contains good accounts of Douglass and Dr. James Lloyd. The war of Independence coincided with the rise of the Warrens and the part played in the revolution by the medical fraternity of Boston is described. Then we have accounts of the foundation of the Massachusetts General Hospital and Medical Society and the rise of Harvard. Biographies of Oliver Wendell Holmes, Jackson, Bigelow, and other pioneers lead up to an excellent chapter on Morton and the first administration of ether for a major surgical operation, an illustration of which forms the frontispiece. Other pioneer American anæsthetists, such as Wells and Long, are here rescued from oblivion, and we are glad to see that although the name of the first patient is not included in the frontispiece, it finds a place in the text; it was Gilbert Abbott, a name surely worthy of remembrance. A brief sketch of modern developments concludes a well-written and fascinating book.

[1] A Brief History of Medicine in Massachusetts. By Henry R. Viets, M.D. With illustrations. Boston and New York: Houghton Mifflin Company. 1930. Pp. 194. $4.

TRAVELLING HOSPITALS IN CANADA.

THE provision of adequate medical attention in the more remote districts of Canada has been a pressing problem ever since pioneer days. There was a time before the coming of the railway when the farmer and his wife on the frontier of the west had to rely on their own native ingenuity and common sense in the treatment of household ills. About three-quarters of the population of Saskatchewan is still rural, and not a small proportion lives in outlying districts to which the problem of bringing health services is difficult. Recently the provincial Government made provision whereby communities could obtain the services of doctors under a coöperative plan. One scheme empowers a rural municipality to make a grant to a medical practitioner as an inducement to him to take up his residence and practise his profession in the community, a grant of money up to $1500 being made to him for this purpose. The other plan is that which makes it possible for rural municipalities, by vote of the residents of the area, to engage a full-time practitioner at a salary not exceeding $5000 yearly. In this case the doctor acts as the community doctor, giving free medical service to all ratepayers and their families. Thirteen Saskatchewan municipalities are trying out the first scheme and 19 districts the second scheme,

FIG. 1.

The Red Cross car of the Canadian National Railways stationed at Fort Frances, Ontario.

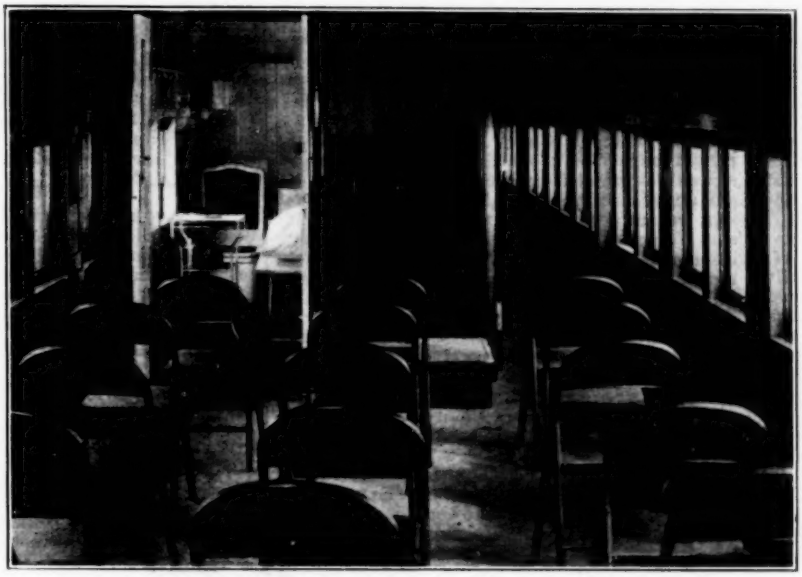
the ratepayers in the latter case paying a tax of something like $3.85 per quarter section of 160 acres. In one or other of these ways there are now few communities which have no doctor within reasonable reach in case of emergency.

Many districts, however, still lack adequate facilities for the treatment of more difficult cases and for the isolation of patients suffering from contagion, or for the spreading amongst the population generally of elementary instruction in first-aid. It is to fulfil this function that the Canadian National Railways are placing in service on their lines three new hospital and first-aid cars. It is the intention of the management that these cars shall be used where hospital accommodation is limited and where a knowledge of first-aid is specially desirable. They will also be used in disasters, such as train wrecks and mine explosions, where speed in the provision of medical assistance is essential. The cars will be in charge of an experienced medical practitioner and will be hauled from place to place as occasion demands. In rural communities lectures will be conducted in the body of the car, illustrated by means of charts and moving pictures, on the subject of first-aid and elementary medical science.

The cars themselves (Fig. 1) are virtually travelling hospitals. They are 71 feet long and divided into six sections, including a locker room, a lecture room, and operating theatre, bathroom, kitchen, and sleeping quarters for the official in charge. The equipment includes a steel operating table, instrument cabinet, medicine chest, and racks with all kinds of splints. The lecture room (Fig. 2) has a blackboard and various charts and, when required, may be transformed into a convalescent or isolation ward (Fig. 3). The living accommodation for the attendant is equipped with lockers and a small kitchenette. The bathroom in block tile has a shower. Plentiful provision of hot water is ensured by a 200-gallon tank placed on top of the car, connected with a heater. Three independent systems are used for lighting. The electric lamps may be lit by current supplied either from the car batteries or from an outside source while the car is standing in a siding; should both these fail, oil lamps present a third alternative.

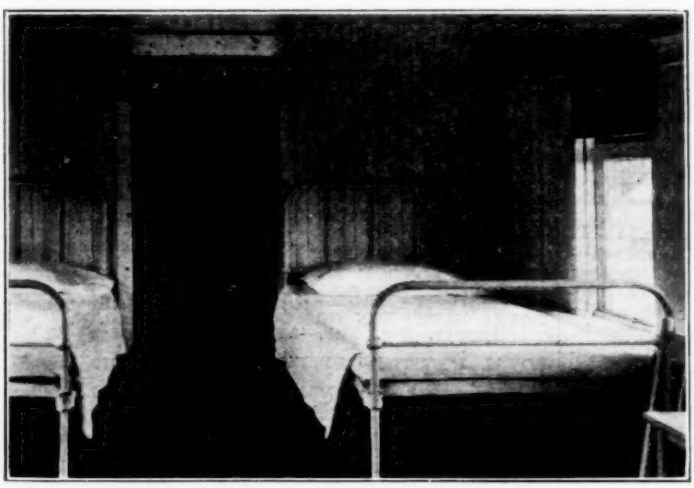
The first car is already in service and the others will be completed shortly.

FIG. 2.



The first-aid instruction car.

FIG. 3.



Interior of the hospital car.

THE RELATION OF REASON TO LIFE.

WITH his accustomed literary skill and dialectic invective, Dr. Schiller has again attacked the problem of the relation of reason to life as an activity.[1] Those who are familiar with his writings on logic in relation to humanism, belief, and formal logic, will find this study familiar, and, unfortunately, without any substantial new matter. The author's thesis is that formal logic strips actuality of its vital links and robs it of its very meaning as a fabric of relations that exist in and for activity. He tries to liberate logic from its thraldom to words and formulæ, and therefore attacks, in the main, absolutism. The most important chapters for any person interested in scientific method are those on Meaning and Formal Theories of Judgment. The author seems, however, to have ignored the advances in the subject of Meaning made by Ogden and Richards. Vaininger is mentioned only once. The book may cause irritation because of its omissions, but is certainly entertaining.

[1] Logic for Use. By F. C. S. Schiller, Fellow of Corpus Christi College, Oxford, and Fellow of the British Academy. London: G. Bell and Sons Ltd. 1929. Pp. 455. 16s.

CONGRESS OF RADIOLOGY.

EXHIBITION AND DINNER.

THE annual congress and exhibition of the British Institute of Radiology (incorporated with the Röntgen Society), held at the Central Hall, Westminster, from Dec. 3rd to 5th, was attended by radiologists from all over the country, with a sprinkling of visitors from the continent. The congress centred round an exhibition of X ray and other apparatus, even a casual inspection of which was enough to show that English manufacturers are well up to date and that their apparatus compares favourably with that of foreign manufacture. There were no striking novelties. Contrary to American practice, which so far has adhered strictly to mechanical rectification, valve rectification here holds the field with the exception of one exhibit. Where all apparatus is so good it is invidious to single out any for special mention; the needs of the radiologist are still varied, and apparatus that meets the need of one will not necessarily be ideal for another. The protective measures in all are of high standard, fully up to that laid down by the Protection Committee, and the exhibition is one that does great credit to the British manufacturers.

The papers presented at the congress were few in number but of exceptional interest. In the technical section was described the new tube that has two focal spots, one for ordinary radiography, the other of large area for use with heavy current in order to obtain rapid clear exposures at long distances. In the medical session Dr. H. A. Harris related his conception of the growth of bone and of arrest due to illness, and Dr. Donald Hunter gave an account of his work on the influence of thyroid and parathyroid on bone, particularly osteitis fibrosa. The Mackenzie Davidson Memorial Lecture was delivered by Prof. G. P. Thomson, F.R.S., on Some Recent Experiments on Cathode Rays; the Silvanus Thompson Memorial Lecture by Dr. A. E. Barclay on the Danger of Specialisation is printed substantially at the front of this issue. It is a good practice for a physicist to give the memorial lecture to radiologists, and vice versa.

The annual dinner held on Dec. 5th at the Trocadero Restaurant was attended by about 140 guests. The President of the Congress, Major C. E. S. Phillips, occupied the chair and Mr. Cuthbert Andrews, in proposing "The Institute," remarked that it was as natural to couple the President's name with the Institute as to link Adam & Eve, David & Jonathan, Burke & Hare, and in more modern times Elephant & Castle. He made a strong appeal for the linking to the Institute of the several independent radiographic societies which were being formed in various provincial centres, and suggested that this could be done primarily by making the *British Journal of Radiology* the official organ for all radiological societies, and so ensuring a comprehensive and accessible record of British radiology. The toast of "The Guests" was proposed by Prof. Woodburn Morison and was responded to by Sir Cuthbert Wallace, Mr. C. C. Paterson, and Dr. Watts Eden. In the intervals of the dinner the Westminster Glee Singers sang.

NEW PREPARATIONS.

(1) EXHEPA, (2) GASTROSIC LEO (Messrs. C. L. Bencard, Ltd., 184, Wardour-street, London).—(1) Exhepa, as its name indicates, is an extract of liver; the glands are selected and fresh and the preparation claims to contain unimpaired the active substances found to be beneficial in pernicious anæmia. It is manufactured by the Danish Chemical Therapeutic Society in Copenhagen, in accordance with a method evolved in collaboration with the Danish Government Serum Institute, by whom the freshness of the glands and the special methods of extraction and desiccation are guaranteed. Exhepa is put up in glass vials, hermetically sealed, and packed in boxes of ten vials, each vial representing a dose equivalent to 4 oz. of fresh liver. For patients who find the characteristic smell and taste of liver disagreeable, the preparation is supplied in a more palatable form, with no alteration of therapeutic value or of price.

(2) From the same firm we have received samples of Gastrosic Leo manufactured from the freshly killed hog stomach. This preparation is also under the control of the Danish Government, and is recommended to the medical profession on the experience derived from tests in certain Danish hospitals as an auxiliary treatment along with liver extract.

NURSERY BISCUITS.

WE have received an assortment of Robb's nursery biscuits which are well known in homes and institutions as useful food for the aged, invalids, and infants from the age of 6 or 7 months. The venerable duration of their popularity makes it unnecessary to say more of these biscuits than that they continue to deserve it.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Dec. 16th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship.
THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) Cases: Dr. H. W. Barber, 1 and 2; Congenital Ichthyosiform Erythrodermia. 3, Psoriasis Associated with Rheumatoid Arthritis. Other cases will also be shown.
FRIDAY.—8.30 P.M., ELECTRO-THERAPEUTICS AND COMPARATIVE MEDICINE. Discussion: A Comparison of Radiological Problems in Man and Animals. Openers: Major A. A. Pryer, Dr. R. W. A. Salmond, Lieut.-Colonel E. Middleton Perry, and Dr. J. B. King, followed by Prof. J. McCunn, Dr. A. E. Barclay, Dr. J. P. Brailsford, Dr. A. Eidinow, and others.

HUNTERIAN SOCIETY.
MONDAY, Dec. 15th.—7.30 P.M. (at Simpson's Restaurant, 2 and 3, Bird-in-Hand-court, 77, Poultry, Cheapside). Dinner. 8.30 P.M., Dr. Remington Hobbs and Mr. M. Oldershaw open a discussion on Puerperal Infection.

CHELSEA CLINICAL SOCIETY.
TUESDAY, Dec. 16th.—7.30 P.M., Dinner Meeting at the Rembrandt Rooms, Thurloe-place, S.W. Sir Thomas Horder will open a discussion on the Treatment of Fibrositis.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, W.C.
FRIDAY, Dec. 19th.—5 P.M., Mr. D. S. Rabagliati, F.R.C.V.S., and Sir W. Dalrymple-Champneys: Undulant Fever.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Dec. 15th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Dec. 18th.—9 P.M., Dr. J. A. Drake: Some Common Skin Diseases Illustrated by Epidiascope and Lantern.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Dec. 16th.—5 P.M., Dr. S. E. Dore: Erythematosquamous Eruptions.
THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
THURSDAY, Dec. 18th.—5 P.M., Dr. H. Burt-White: Importance and Treatment of Hæmorrhage in Pregnancy.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Dec. 19th.—4 P.M., Mr. W. A. Mill: Hoarseness.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Dec. 16th.—3.15 P.M., Dr. Rubens Wade: Anæsthesia.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Dec. 17th.—4 P.M., Prof. Edgar L. Collis: Prevention of Industrial Diseases.

ST. JOHN'S HOSPITAL, Morden-hill, Lewisham.
MONDAY, Dec. 15th.—4.30 P.M., Dr. John Gibbons: Cardiac Cases in Infancy and Childhood.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Dec. 16th.—4.15 P.M., Dr. E. B. Leech: Pericarditis and Adherent Pericardium.

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Announcement of the actual opening Exhibition will be made in the near future.

ADDRESSES AND ORIGINAL ARTICLES

THE NEURO-MUSCULAR OBSTRUCTIONS OF THE GASTRO-INTESTINAL TRACT.*

BY A. JAMES WALTON, M.S., B.SC. LOND., F.R.C.S. ENG.,
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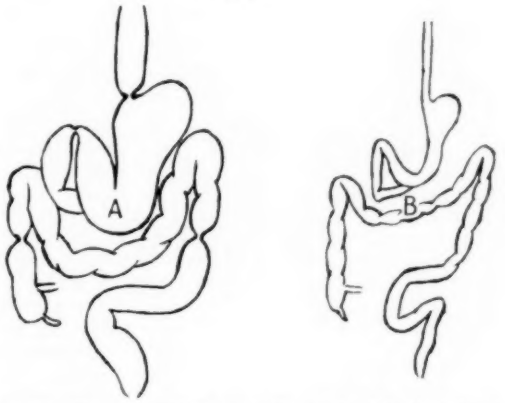
Mr. H. G. Wells, in one of his epic stories, makes his hero say: "This here progress it keeps on . . . you'd hardly think it *could* keep on." In no branch of knowledge is this more true than in that of medicine. In recent years progress has been so great that it is impossible for any one man to obtain a complete mastery of the whole subject, and, indeed, great difficulty is being experienced in arranging the curriculum so that the student can obtain a wide survey of the whole of medicine in the short time at his disposal. I believe, however, that we are even now on the brink of the discovery of a few basic facts which will tend to simplify medicine as a whole.

Already there is a tendency for certain diseases which have been regarded as distinct from one another to be grouped together as different manifestations of similar lesions. One of the most elusive and interesting of such groups is that concerned with the neuro-muscular mechanism of the gastro-intestinal tract. More and more conditions are being recognised as due to an abnormal action of this mechanism, so that they now form a large proportion of all abdominal lesions.

The forward passage of the intestinal contents is dependent in the normal state upon the presence of painless peristaltic waves, each of which consists of a ring of contraction preceded by a zone of relaxation; the whole passing down the wall of the gut. Although in many areas combined with other movements, these peristaltic waves are present from the commencement of the œsophagus to the termination of the pelvic colon, and are controlled by the vagus and sympathetic nerve fibres. In the œsophagus, as Kelly states, experimental work has shown that section of the vagi is followed by dilatation of the œsophagus, while stimulation of the peripheral end causes contraction of the whole tube. In the stomach the experimental results are less uniform, but Watanabe and McCrea show that the balance of evidence supports the view that stimulation of the vagus increases the excitability of the stomach and decreases the emptying time. Similar results are given by division of the sympathetic fibres, while their stimulation has the opposite effect. Hughson, on the other hand, showed that section of the vagus decreases the emptying time. In experiments on the intestines, Koehler finds that the vagal impulses excite peristalsis, and the sympathetic impulses diminish it. As Eppinger and Hiss have shown, two conditions may therefore be recognised: the vagotonic, which is shown by hypermotility and hypertonicity; and the sympatheticotonic, shown by atony and hypotonus.

In the case of the fixed sphincters the evidence is less clear. It would be expected that with increased peristalsis there would be relaxation of the sphincters, whether at the cardia, the pylorus, the ileo-cæcal valve, or the pelvi-rectal junction. Spasm of these sphincters would also be expected with inadequate action of the vagus or overaction of the sympathetic. In a similar way, the failure of a peristaltic wave to pass on—that is, an area of spasm of the intestinal tube—would be expected with sympathetic overaction or vagus inhibition. Clinical evidence strongly supports this view, but the experimental findings are less definite. Thus, although Kelly states that section of the vagus is followed by failure of relaxation of the cardia and stimulation of the peripheral end by dilatation of this sphincter, Hughson found that after division of the vagal supply to the stomach it was impossible to produce reflex pylorospasm,

FIG. 1.



Diagrammatic representation of the gastro-intestinal tract: (A) with section of vagus or stimulation of sympathetic; (B) with stimulation of vagus or section of sympathetic.

and McCrea found that resection of the pyloric vagal branches produced a semipatulous condition of the pyloric sphincter. In spite of these somewhat divergent findings, the consensus of opinion to-day is that the vagal impulses are augmentor, and the sympathetic are inhibitory. (Fig. 1.)

The acceptance of these views will make it evident that there are three changes which may give rise to obstruction in some portion of the intestinal tract. These three are: (1) paralysis of both systems, or, as Koehler suggests, a balance at a lower level than normal; (2) relative paralysis of the vagus, or overaction of the sympathetic, for all impulses; (3) relative paralysis of the vagus, for those impulses which pass only to the sphincters.

Paralysis of Both Systems.

ACUTE DILATATION OF THE STOMACH AND ILEUS PARALYTICUS.

Ætiology and Pathology.—Both conditions may occur at any age or in either sex, but in my experience there is unquestionably a personal idiosyncrasy, so that certain patients have a tendency to develop paralytic dilatation of the stomach or intestines under a slighter provocation than that usually required. If there be any evidence of this congenital fault, an operation, and especially an abdominal operation, should only be undertaken after very careful preparation. There have occurred in my own practice several cases who have developed this serious complication after two separate operations.

* The Purvis Oration, delivered before the West Kent Medico-Chirurgical Society on Dec. 12th.

Rarely the symptoms may arise after over-distension of the viscera and as a sequel of acute disease. More commonly it is found as a result of operative treatment—the three most potent predisposing factors appearing to be the administration of an anæsthetic, rough handling of the stomach or intestines, and the presence of sepsis. Nevertheless, a number of cases had been reported where acute paralytic dilatation has followed operations other than those upon the intestines, and even where no anæsthetic has been administered.

The pathological changes are similar in both conditions. The stomach is greatly dilated, so that it fills nearly the whole of the abdomen. It is V-shaped, with an immensely dilated descending limb on the left, and a somewhat similar ascending limb on the right; the two limbs being separated by a sharp kink on the lesser curve. The wall of the stomach is so thin that it appears to be formed of one layer only, and is sufficiently transparent for the fluid or gaseous contents to be visible when the abdomen is opened. When the stomach is lifted up the dilatation and thinning is seen to pass beyond the pylorus and to involve the duodenum. Many cases have been described as terminating abruptly at the site of the crossing of the superior mesenteric vessels, and thus the condition has been regarded as an acute obstruction due to the pressure of these vessels. It is true that in a few cases a line of necrosis has been observed at the site of the vessels, but in my own experience this is rare, the dilatation gradually decreasing and fading away near the flexure or in the upper part of the jejunum. It is possible that even in those cases in which a line of necrosis has been observed it is secondary to the dilatation which compresses the gut against the vessels. Examination of the viscus from within will show the same evidence of dilatation with flattening of the normal mucosal folds, and general thinning. Areas of superficial ulceration and erosions are constant, and it is the loss of blood in small quantities from these areas that gives the brown or black colour to the vomit.

The pathological changes in the intestine in paralytic ileus are almost identical. There is the same enormous dilatation and thinning, with no evidence of any hypertrophy of the gut wall, the same absence of any mechanical obstruction, and yet the same failure of the intestinal contents to pass. An interesting light is thrown upon the ætiology by those cases in which the septic factor is most in evidence. Similar changes of the whole gut are to some degree common with all forms of septic peritonitis, but in some, as in the "ileus duplex" described by Sampson Handley, one or two loops of gut are alone affected. In either, the condition, as in the case of the stomach, gradually fades away below.

The profound dilatation, the complete absence of peristalsis and of any organic obstruction, the relative frequency with septic conditions, and often the failure to obtain relief by drainage, make it evident that both ileus paralyticus and the more local condition of ileus duplex are due to a paralysis of the gut. In spite of the many theories put forward to account for acute dilatation of the stomach, this condition, as first suggested by Campbell Thompson, seems undoubtedly to be of the same nature, for in certain cases, as in those reported by Richardson and Lee, it arises with almost startling suddenness during the course of an operation. In nearly all cases there is no evidence of any obstruction, either mechanical or spasmodic, and its onset or progress is entirely uninfluenced by the performance of gastro-enterostomy.

The seat of the lesion appears to be in the nerve paths and not in the muscle coats, for adrenalin given by mouth seems to act directly upon the gastric muscle and to cause it to contract, while hypodermic injections of eserine salicylate have long been known to have a beneficial effect upon the intestinal muscle in cases of ileus paralyticus. Koehler believes that the condition is not one of complete paralysis, but is rather a balance of the two nerve systems at a lower level than normal, and he states that if the cœliac plexus be injected with nicotine, whereby the sympathetic impulses are removed, there is the immediate onset of peristaltic movements. Similar effects have been claimed to follow the administration of a spinal anæsthetic. Mauclaire and others have produced evidence of the value of this method, but as it was in many cases unfortunately given to patients suffering with mechanical obstruction it has been discredited.

Symptoms.—In either case the symptoms are due to a rapid distension of the viscus with gas and fluid, and to an increasing collapse from toxic absorption. When the stomach is mainly affected, vomiting—at first regarded as simple post-anæsthetic—becomes increasingly severe until it consists of an almost effortless emission of foul, brown fluid, which is an overflow rather than an actual vomit, for the patient continues to complain of discomfort and distension in the epigastrium, and the stomach can be seen enormously dilated even in the presence of almost constant vomiting. No peristaltic waves are seen. When the condition is mainly in the small intestine the vomiting is at first less, and the abdomen evenly distends. Neither flatus nor fæces is passed, and later vomiting of a foul brown fluid, similar to that seen with an acute mechanical obstruction, occurs. In either case there is a rapid collapse.

Treatment.—Since the condition is paralytic in nature, any form of treatment will have to aim at restoring the power of contraction to the paralysed muscle. It is as important, as with any other exhausted portion of the neuro-muscular system, to provide adequate rest, and it is essential to realise that absolute rest to the stomach and intestine will generally prevent the onset of the condition. A few years ago the medical profession was obsessed with the idea that the one thing necessary after an operation was to obtain an action of the bowels, but with a wider appreciation of the fact that no aperient whatever should be given, either by mouth or hypodermically, for two or three days after an operation, and that morphia should be freely allowed, these conditions are becoming rarer. The value of such a line of treatment is clearly shown in cases of early acute obstruction from carcinoma of the colon. A patient is brought in with obstruction who is already vomiting and becoming distended. Colostomy is performed, but the gut is not opened. If morphia is then given it will frequently be found that all the acute symptoms entirely disappear, and the opening of the colostomy, instead of having to be performed within a few hours, can often be delayed for several days.

In the early stages it may still be possible to bring about a cure by directly stimulating the muscle which is only slightly exhausted. I am a great believer in the administration of suprarenal extract for slight dilatations of the stomach. I originally gave this where there was a post-operative gastric hæmorrhage, but in some mild degrees of dilatation it was difficult to determine whether the dark-coloured vomit was due to a small hæmorrhage or to the early onset of dilatation. Suprarenal extract was given in the belief that the primary change was a hæmorrhage, and it was found that the stomach contracted well and

vomiting ceased. It is my custom to give 1 drachm of the commercial extract of 1/1000 with 1 drachm of water every hour for six doses. In the case of the intestine, eserine sulph., administered hypodermically in doses of gr. 1/200, may have a similar effect upon the muscle. The muscle cannot be rested while it is stretched, and, therefore, if dilatation is actually present the viscus must be emptied. With the stomach, frequent washes are essential. If the patient is turned over on his face with the thorax well supported on pillows natural emptying may be aided. With the intestine, an enterostomy may be required, but this is not so satisfactory, for it is almost impossible to empty the whole length of the gut, and even if a large portion be threaded over a glass tube it will probably refill. If only one loop be affected the gut should be drained from above. In "ileus duplex" Sampson Handley accomplishes this by means of an ileo-cæcostomy combined with cæcostomy. Any other form of operative treatment, such as a lateral anastomosis, is almost certain to fail, since the wall of the gut is completely paralysed.

Relative Paralysis of All Vagal Impulses.

There is a very common but heterogeneous group of conditions in which abnormalities of the neuromuscular system are not yet proved to be present, although there is considerable suggestive evidence of such a change which would fully explain the clinical symptoms. These conditions are all characterised by delay in emptying, by dilatation, and by the absence of any visible obstruction or of hypertrophy of the wall behind the suggested obstruction. In many cases there are definite areas of spasm. In fact the changes are precisely those that would be expected to follow diminished action of the vagus or overaction of the sympathetic.

Etiology and Pathology.—The majority of these patients show the general characters of visceroptosis, and are for the most part females. In them the alterations in the gut movements form only a part of a series of abnormalities which may be classified as: (*a*) changes in body structure; (*b*) alterations in mentality; and (*c*) visceral changes. The latter consist of the presence of dilatation and atony with ptosis, and the presence of accessory membranes and bands.

The stomach, as a rule, is lower than normal, although all ptotic stomachs may not give symptoms. It is usually atonic and is often dilated, and there is nearly always considerable delay in the emptying, as shown by X ray examination. Although the diminution in the rate of passage of the contents is very constant, areas of spasm are frequently found. As a general rule these are shown by a notch or depression in the greater curvature, which used frequently to be mistaken for an hour-glass stomach. They are, however, more limited, they disappear spontaneously or after the administration of eserine or amyl-nitrite, and no meniscus of a lesser curve ulcer is to be found. Occasionally the spasm may be much more extensive, so that the whole pyloric and even the tubular part of the cardiac portion of the stomach may be involved, giving rise to an X ray picture closely resembling that of a leather-bottle stomach (Fig. 2). In others the spasm is localised to the pylorus and appears to lead to considerable delay in emptying. This variety has been given the special designation of pylorospasm. It not infrequently occurs as a reflex phenomenon with lesions situated in other portions of the abdomen, such as the appendix or gall-bladder, or is found even more commonly with gastric or duodenal ulcers. It may, however, occur quite apart from such local lesions, and is then regarded by many as an important factor in producing symptoms, especially in those who are the subjects of general ptosis. Even in these cases, where the spasm is limited to the pylorus, the stomach is thin and flabby and does not show the muscular hypertrophy such as is found with organic obstruction. At operation the tendency to spasm is always very marked, so that any portion of the stomach which is picked up during the gastric examination will show areas of contraction which form a ridge about 1 in. long and ¼ in. wide, running either transversely or longitudinally across the stomach. Within a few minutes this area of spasm disappears, leaving the normal soft wall. In the past, such areas were frequently mistaken for the base of an ulcer, and a gastro-enterostomy was incorrectly performed. The nature of these changes has perhaps led to more controversy than any other lesion in surgery, but every theory has so far failed to explain in a satisfactory manner the cause of the pain and delayed emptying. Some dilatation and membrane formation is found in every case, and it therefore seems certain that these changes are in some way connected with the presence of pain. The bands and ptosis, and possibly the changes in body structure, are undoubtedly congenital faults, and, as Briggs has shown, are hereditary in nature, but the symptoms will not occur unless there be an added loss of tone. There is never any true organic obstruction, for it is a matter of common knowledge that muscular hypertrophy is invariably absent, and although in all cases there is a delay in the passage of the visceral contents there is never any evidence of a localised mechanical obstruction. Moreover, Hurst has conclusively proved that a dropped and atonic stomach or colon may be found in patients who are free from all symptoms, such a position being present merely as an anatomical variation. The part taken by these various factors in producing symptoms has been admirably and exhaustively reviewed by

FIG. 2.

Widespread gastric spasm resembling a "leather-bottle stomach. No gastric lesion was found at operation.

Bedingfield, who sums up by saying that "the association of malnutrition, poor muscular tone, and an abnormal mental reactivity is characteristic of this group of cases," and that the association appears to depend upon a congenital, possibly inherited, inability of the individual to adapt herself satisfactorily to the various stresses and strains of life. Whatever be the cause, there can be no doubt that the dilatation of the viscera and the stasis of the contents is dependent upon a neuromuscular functional error.

The symptoms date from very early life; they are almost continuous without the definite periodicity of a chronic ulcer; the pain, although often severe, has no clear relationship to the ingestion of food; it may be localised to the stomach or referred to any portion of the intestinal tract; vomiting is frequent and does not give complete relief; there is no loss of appetite and constipation is very common.

Treatment.—When it was believed that the ptosis was the chief factor in causing the symptoms many operations were devised to fix the stomach in a normal position. They are being generally abandoned now that it is becoming more widely recognised that the low position of the stomach is usually only a variation, and that the symptoms are rarely cured by fixation. In all cases of this nature the treatment should primarily be medical. In addition to the changes in the stomach, the abnormalities in the body structure, and especially the mental changes, will require attention. Belladonna is generally advocated as a means of overcoming the spasm, but it is of interest to note that Ritvo and Weiss were able to demonstrate under X rays that it was immediately relieved by eserine given by mouth or hypodermically; which drug also increased peristalsis and heightened the tonus, thus supporting the view that the changes are due to a relative weakness of the vagal impulses. When the spasm is confined to the pyloric sphincter Deaver and other surgeons have advocated its free division. Acting on the belief that the vagal impulses are weakened, operations have been devised whereby the inhibitory sympathetic impulses have been removed by dividing the nerves in the lesser omentum or in the stomach wall itself. Gomain, in 1914, and Jianu, following Gomain's technique, successfully excised the semilunar ganglion and the splanchnic nerves for the gastric crises of tabes. Pribram, regarding these cases of spasm as of a somewhat similar nature, states that he was able to cure by excision of the cœliac ganglion a patient who had had eight previous operations for gastric pain.

DUODENAL ILEUS.

A mild degree of dilatation and apparent atony of the duodenum is common in all the visceroptotic cases, and even when the duodenal condition dominates the clinical picture Wilkie has shown that it is most commonly found in adult females who are the subject of ptosis. The condition was known to Rokitansky in 1842, and cases were reported by Fagge in 1872, but it has only been widely recognised since the later work of Wilkie. Here, as with the other varieties of neuromuscular change, the symptoms, as Barling has shown, often date back to childhood, suggesting a congenital origin. At first associated only with discomfort and flatulence, it later gives rise to severe epigastric pain which is most marked from one to two hours after food. With it there is loss of appetite and often headache, and there are frequent exacerbations of more severe vomiting. On examination the general characters of virginal ptosis are nearly always in evidence, and splashing can be elicited over the dilated stomach, but rarely, if ever, is there any visible peristalsis. The change appears to be a chronic variety of acute dilatation of the stomach and, like that condition, has been thought to be due to obstruction from traction of the mesenteric vessels. Wilkie has found that in some cases the duodenal wall is hypertrophied, and that there is coexistent ulceration of the duodenum in some 20 per cent. of the cases. In one of my own eight cases there was a line of superficial ulceration at the position of the mesenteric vessels, but in the majority there was no hypertrophy whatever of the muscular wall, and the dilatation faded away and showed no sharp termination or other evidence of mechanical obstruction; thus, although a few cases would appear to be mechanical in origin, I think there can be no doubt that the majority are atonic in character, and are due to a neuromuscular fault. In support of this, my own experience has been that only a few are relieved by duodeno-jejunostomy.

ENTEROSPASM.

Spasm of portions of the small intestine is probably one of the factors in causing pain in the visceroptotic patients, and in them there is often dilatation of the loop of gut proximal to an ileal kink. There are also well-recognised cases where symptoms of acute intestinal obstruction have necessitated an operation, but when the abdomen is opened a dilated and apparently obstructed loop is found to terminate below in an area of tight spasm with no organic obstruction. The nature of the pain found in many cases of calcareous mesenteric glands is also suggestive of the presence of localised intestinal spasm. In none of these cases of neuro-muscular obstruction, which are all relatively rare, is there any hypertrophy of the wall of the gut proximal to the spasm. The condition can usually be relieved by dietetic and medical measures.

COLONIC SPASM.

The pathological changes found in the colon in cases of visceroptosis and the symptoms they cause are in every way comparable with those of the stomach and small intestine, although in the colon accessory membranes and bands are generally more in evidence. The symptoms are most frequently allocated to the site of the atonic and dropped cæcum—the right-sided ptosis of Coffey. In such cases there is marked delay in the passage of the contents of the colon, but never is there any evidence of mechanical obstruction or of hypertrophy of the dilated gut. Although in these cases areas of spasm may occur and may be seen during X ray examination, there are others usually seen somewhat later in life in which spasm of the descending and pelvic colons is the outstanding feature. It is more persistent than in the last group and tends to be more localised, while often giving rise to severe pain. Owing to the later age of the patient it is therefore very prone to be mistaken for carcinoma of the colon. Ryle has reported a series of 50 such cases. He lays stress upon the fact that although the average age was 39, 66 per cent. of the cases were females—but were usually thin, spare, nervous, anxious, and neurotic—thus showing the relation of this type to the variety with congenital visceroptosis. In my own series, however, examples also occurred in patients, generally females, who were more elderly, who showed none of the stigmata of virginal ptosis and presented only a short past history, so that the diagnosis of carcinoma was even more closely resembled.

In this variety also the affected portion of the intestine shows no evidence of mechanical obstruction

and no hypertrophy of the gut behind the areas of spasm. In some cases there is an associated colitis to which the spasm is possibly secondary. Ryle found 11 of his 50 cases had such mucous colitis. In other cases it may occur with lesions elsewhere in the abdomen, and thus is possibly reflex. In one of my own cases there was a carcinoma of the stomach, but in others no cause can be found. The chief complaint is pain, which may sometimes only consist of a dull aching, but more frequently occurs as attacks of severe colic, very suggestive of an incomplete obstruction. This may have been sufficiently severe to have necessitated the administration of morphia. During these attacks the contracted portion of the intestine may be palpable as a tender lump which is easily mistaken for carcinoma. An X ray investigation after an opaque enema will reveal a filling defect, a segment of the colon being emptied and failing to fill throughout the whole examination. If the defect is sharply limited above and below, a spasm is suggested, but in others the outline appears to be more irregular and the similarity to carcinoma is thereby increased (Fig. 3). The condition will, as a rule, yield readily to medical treatment, but owing to the uncertainty in the diagnosis and the possibility of the presence of carcinoma, an operation may be required.

Probably at a later stage of the same condition may be seen cases in which the pelvic colon becomes considerably dilated and atonic, although attacks of spasm may still occur, and the patient suffers with an increasing degree of constipation. These changes may progress until the condition resembles clinically one of Hirschsprung's disease, and may require treatment upon somewhat similar lines.

Relative Paralysis of the Vagal Impulses to the Sphincters.

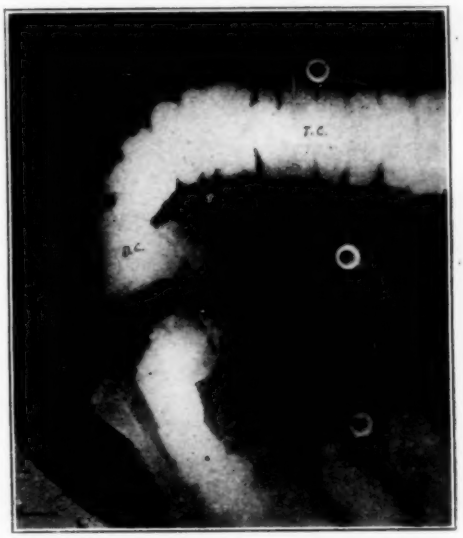
The third group is characterised by the fact that there is an enormous dilatation and hypertrophy of a portion of the canal, but a most careful post-mortem examination fails to reveal the presence of any obstruction. The change is sharply limited below, usually at the level of one of the fixed sphincters, and although in life X ray investigation shows that there is an obstruction at this site, yet after death no change can be demonstrated in the muscle of the sphincter.

CARDIOSPASM, OR ACHALASIA OF THE CARDIA.

Ætiology and Pathology.—The condition may occur in either sex. In my own series of 33 cases, 16 were males and 17 females. Most commonly the patients seek treatment at or about middle age, the average age of my cases being 48. I have, however, for long been convinced, owing to the enormous amount of dilatation and hypertrophy, that the change has gradually developed since birth. In later life, owing either to increase in weakness or to the sudden onset of some acute illness, compensation has failed, and symptoms have developed. This view is now supported by the fact that a considerable number of cases have been reported in young children and others in adults in whom symptoms have dated back for many years. Langmead has reported a case in a child of 16 months and Still two patients aged 2 and 4, in all of whom the symptoms dated back to birth. Poynton also has reported a case, aged 9, with a history from the age of 11 months, and Parkes Weber collected reports of 11 cases occurring in the first seven years of life. In the 33 cases in my own series, the youngest was aged 10 years, with symptoms from birth. In several others the symptoms dated from an acute illness suggesting that this was the cause of the failure of compensation in a long-established condition. It would therefore appear that the lesion is often a congenital fault.

The pathological changes consist of an enormous dilatation extending from just below the cricoid cartilage. In the earlier stages it ceases abruptly at the level of the diaphragm, but later extends to the cardiac orifice. It was the termination at the level of the diaphragm which formerly gave rise to the belief that the obstruction was caused by spasm of that muscle. With the dilatation there is usually some lengthening, and owing to the varying combination of these two changes different varieties are

FIG. 3.



Two areas of spasm of the descending colon, the upper of which closely resembles carcinoma. (The print has been reversed.)

described. Moore, who has paid much attention to the pathological aspect of this subject, described a fusiform variety which is the commonest; a flask or pear-shaped type and an "S"-shaped form which is uncommon. In advanced cases the dilatation may be sufficient for the œsophagus to contain a pint or more. It is always the most characteristic feature as seen in the X rays (Fig. 4), and there is no other condition which causes so extreme a dilatation. In association with the increased capacity there is an enormous hypertrophy of the muscular wall, and it is this change which so sharply differentiates the conditions in this group from those in the last. The amount of hypertrophy is commensurate with the dilatation, but in some cases, presumably early examples in which there is good compensation, the hypertrophy dominates the picture. The thickening of the wall commences gradually above at the level of the cricoid cartilage and, increasing below, ceases abruptly with the dilatation either at the level of the diaphragm or the cardiac orifice. The cardiac sphincter shows no hypertrophy, a point on which Hurst lays great stress in his argument that the condition is a failure of the sphincter to relax rather than to go into spasm. I know, however, of no condition of proved spasm of involuntary muscle which is associated with hypertrophy. The

conditions always thought to be spasmodic never show any such change, but, as Hurst says, these also are probably conditions of achalasia. He described hypertrophy as occurring with spasm of the anal sphincter, but I have been unable to find in my own experience an example of such a change.

In my own cases a bougie passed down the œsophagoscope was always found to be gripped by the sphincter in so definite a manner that it could readily be demonstrated, and there was thus no doubt as to the presence of spasm.

In advanced cases there are nearly always secondary inflammatory changes in the mucosa, which is flattened

FIG. 4.

Radiogram of case of "cardiospasm."

and smooth and may show areas of superficial ulceration. In long-standing cases there are patches of leukoplakia which may pass on to carcinoma. Souttar has reported such a case, and Hurst mentions several such in the literature and in his own experience.

The enormous hypertrophy of the wall of the œsophagus, the powerful contractions which may be seen on radiographic examination, and the forcible ejection of the œsophageal contents make it evident that there is no paralysis of the œsophageal wall. For this reason, and because no obstruction could be demonstrated, Mikulicz suggested that there was a spasm of the cardiac sphincter; Hurst, however, strongly supports the view first enunciated by Einhorn that there is a failure of the sphincter to dilate rather than a spasm. He bases this view largely upon the fact that he could find no spasm, and that a bougie could be easily passed. He therefore calls the condition "achalasia of the cardia." He supports the findings of Kraus that there is a degenerative change in the vagus, and he and Rake were able to demonstrate such a lesion in 11 cases which were examined. If this degeneration extends upwards beyond the cardiac area it is remarkable that even in the late stages the muscle of the œsophageal wall is greatly hypertrophied and forcible peristaltic waves are present. Hurst also states that inflammation of the œsophagus may give rise to a secondary spasm of the sphincter. This may be the explanation of why a bougie was never gripped in his cases, while in my own—which were probably more advanced examples—it was always firmly gripped by the sphincters.

Symptoms.—In most of my cases the symptoms have been present for many years. In my youngest patient, aged 10, they dated back to birth. In some cases there has only been a short history which has then not infrequently dated from an acute illness, suggesting that this has been the cause of the failure in compensation. The onset may be with pain or a feeling of obstruction. If care be taken in obtaining the details of the history of the early stages there is, as a rule, but little difficulty in making a correct diagnosis. The history is much more prolonged than with carcinoma of the œsophagus. The obstruction is variable, and in the earlier periods is often more marked to the passage of fluids than to that of solids. Sometimes the solid food sticks and only passes after the taking of a considerable amount of fluid, this probably forming a sufficiently high column to overcome the obstruction. In the earlier stages regurgitation occurs after the ingestion of a few mouthfuls, but later the œsophagus becomes so dilated that it may accommodate the whole meal before regurgitation occurs, and thus the condition may easily be mistaken for one of pyloric obstruction. In one of my cases a gastro-enterostomy had been performed elsewhere on this supposition. If the history has been carefully taken this mistake will be easily avoided. The nature of the obstruction should not be confused with an œsophageal pouch, for in the latter the difficulty in swallowing increases as the meal progresses, and there is only the regurgitation of a small quantity of material, which is often foul. Diagnosis can always be confirmed by X rays and by œsophagoscopy. By the former, the site of the obstruction, the narrow but regular passage and the enormous dilatation of the œsophagus are characteristic; with the latter the large quantities of fluid moving up and down with respiration; the great dilatation and the smooth but contracted orifice below give a picture obtained with no other lesion.

Treatment.—The evidence that the condition is due to a relative paralysis of those vagal impulses which supply the sphincter is so strong that the rational procedure would seem to be to overcome the relative overaction of the sympathetic impulses by division of these fibres. Such an operation, however, is one of considerable difficulty, and would appear to be unnecessary in that powerful contractions of the muscle wall of the œsophagus are always present. I have been unable to find an account of the operation having been performed. The spasm of the sphincter or its failure to relax may be more readily overcome by forcible stretching. This has been performed by two methods. In the one, a dilator is passed from above. Whether this dilator be a simple or mercury bougie, as used by Hurst, or a hydrostatic dilator as used by Plummer, it has the objection that the dilatation is relatively incomplete, and thus the condition tends to recur, so that the dilatation has to be repeated on many occasions. It is claimed by Hurst and Plummer that the measure of relief may be so complete that in the earlier stages at any rate the patient may be enabled to live a useful and comfortable life by its use. In my own series of 33 cases there have been 14 where this method has failed after prolonged trial. This is very possibly due to the fact that most of the cases which seek surgical aid are far advanced. Five cases in my

series were seen in the early stages and have been treated with dilatation with bougies with complete success. It is true that the dilatation has to be repeated at relatively frequent intervals, generally once a month, but they have lived and taken food in comparative comfort, one for nine years, one for six, two for four, and one for one year. The other method, which was first introduced by Mikulicz, is that of dilatation from below with the fingers, introduced through the opened stomach. The drawback of this method is that it is an operation of considerable magnitude. It aims at so forcibly dilating the sphincter, that the muscle-fibres, if not torn, are so widely stretched that they are permanently paralysed. There is thus the risk that on the one hand the procedure is not carried sufficiently far, so that after a time the paralysed fibres recover and the symptoms return. On the other hand, if the stretching is carried too far the mucosa may be lacerated, and severe hæmorrhage with later a fibrous stricture occur, or even the whole wall be torn and a fatal infection spread to the mediastinum. For this reason the dilatation must always be performed with the fingers, for with any form of instrument insufficient control would be obtained. In practice the results, if the method be carefully used, are so satisfactory that any of the more dangerous operations of performing an anastomosis between the stomach and the dilated œsophagus are unnecessary. Nor is it indeed likely that any operation upon the sympathetic fibres will give more satisfactory results.

My own series includes 33 cases in all. Of these, 22 were treated by digital dilatation from below through the opened stomach, 14 of them after the prolonged passage of bougies had failed. Of these 22, three died after operation, one, a patient with myocardial degeneration, from cardiac failure, one from post-operative pneumonia, and one from sepsis following a tear of the œsophageal wall from excessive dilatation. Of the remaining 19, 13 have remained in perfect health for periods extending up from one to 11 years. They can eat anything and have required no after-treatment. Six have not been complete successes; one of these was dilated with only one finger. The condition recurred and was dilated again to four fingers, since when he has remained in perfect health for four years. One developed a fibrous stricture, evidently from a tear of the mucous membrane, and has only obtained incomplete relief from the passage of bougies. Four have slight difficulty after seven, six, three, and one year respectively, but this is insufficient to require any further treatment, there being only an occasional feeling of obstruction which is relieved by a copious drink. When it is remembered that without treatment this lesion is steadily progressive, and not only causes grave discomfort but ultimately leads to profound wasting and starvation, going on to death, there is no doubt that this operation must be regarded as satisfactory, and with more experience may be looked upon to bring about a complete cure in the majority of cases.

PYLOROSPASM.

Conditions of spasm of the pyloric sphincter as a reflex phenomenon and as part of the relative paralysis of all vagal impulses have already been discussed. The well-known condition of congenital pyloric stenosis, and the rarer examples with a similar pathology which are found in adults, have by many been regarded as due to prolonged spasm of the pyloric sphincters, and the lesion is indeed often described as an example of the amount of hypertrophy which will follow a simple spasm. That the condition in young infants is one of spasm is, in my opinion, definitely disproved by the fact that it may occasionally be found in the fœtus, that so great a degree of hypertrophy would be impossible in the two or three weeks in which symptoms have been present, that it is frequently present in several members of the same family or in both of twins, that the hypertrophy persists in spite of complete rest by gastro-enterostomy, and I believe, in spite of the recent work of Wolff, that cases said to be cured by medical treatment are in fact only relieved in part, and tend to recur later in life. For these reasons I would insist that this change is a congenital deformity and is not in any sense of the word a neuro-muscular lesion.

It would be expected that with such definite neuro-muscular lesions as cardiospasm and Hirschsprung's disease, a precisely similar change would be found in the stomach; that is to say, one in which there is an enormous dilatation and hypertrophy of the stomach but no visible obstruction after death. It has, in fact, been claimed that such a condition does occur in young infants and that the visible peristalsis from the hypertrophied stomach may give rise to an erroneous diagnosis of congenital pyloric stenosis, but at operation the characteristic hypertrophy of the sphincter is not found. My colleague, Dr. K. H. Tallerman, tells me that he has seen one such case, but although I have for long been searching for such a condition I have failed as yet to find an example. It would, therefore, seem as though a relative paralysis of vagal impulses to the sphincter of the stomach, if it does exist at all, is of extreme rarity.

IDIOPATHIC DILATATION OF THE COLON: HIRSCHSPRUNG'S DISEASE.

There is a condition of the colon which appears to be in every way comparable with cardiospasm in that the gut shows an enormous dilatation with hypertrophy of the muscular wall and evidenced by profound constipation, and yet at operation or after death no mechanical obstruction is to be found. Some confusion has, however, arisen owing to the fact that two distinct groups of cases have been reported as examples of this disease. There is one occurring in adults, generally over the age of 50, in which the changes are limited to the pelvic colon. This variety, as was shown by Treves, in 1899, and by Lowenstein, in 1907, has almost certainly no relationship to true idiopathic dilatation, but is a chronic form of volvulus. The true variety is a rare disease. In the 131,000 patients admitted to the London Hospital in the years 1900–09, there were only four examples. Nevertheless, Lowenstein was able to collect 120 cases recorded in the literature, and many have been reported since. There have been 12 examples in my own practice. It is more common in males than in females, Hale-White stating that five out of six are of the male sex. Nine of my own cases were males. It is essentially a disease of young people, and the symptoms generally date back to infancy. Hawkins states that it always dates back to birth, and reported three cases aged 3 weeks, 10 months, and 12 months respectively. Ladd has also reported five cases in children aged 2 months, 3, 6, 7, and 9 years respectively, while Popper has had the interesting experience of observing the condition in each of twins aged 4 days. There can thus be no doubt that the disease is of congenital origin, although, as with cardiospasm, the onset of symptoms may be delayed for a long period.

The characteristic pathological change consists of an enormous dilatation and hypertrophy of the

gut (Figs. 5 and 6). As a general rule the whole of the colon from the pelvi-rectal junction to the cæcum is affected, although the change is generally more marked in the lower part of the gut. The dilatation

FIG. 5.

Idiopathic dilatation of the colon. The size of the large intestine is best seen by comparing it with the portion of ileum attached. The whole colon was affected, the pelvic colon showing the most change.

is enormous, the colon filling the whole of the much-distended abdomen. In many of the reported cases the pelvic loop has been described as resembling a flexed leg and thigh. It is often 6–8 in. in diameter. Owing to the distension the normal sacculations, and generally the longitudinal bands of muscle, are no longer visible, the gut forming a smooth-walled sac over which the muscle is evenly spread. The muscular wall is greatly hypertrophied and may reach even ½ in. in thickness. In life, active peristaltic movements are easily visible. The mucosa is stretched and smooth, and often shows areas of ulceration which may penetrate the walls, the majority of the fatalities being due to perforation. Above, the change may extend to and be sharply limited by the ileo-cæcal valve, or may cease lower down when it fades away in a funnel-shaped narrowing to an area of normal colon above. Below, the dilatation usually ceases at the pelvi-rectal junction, either sharply or by a funnel-shaped narrowing. The anal canal is unaffected, as a rule, but in some cases shows some dilatation. In the former type the change appears to end at the sphincter between the pelvic colon and rectum, in the latter at the anal sphincter. It is probable, however, that the sphincter action of this portion of the gut is not divided into separate portions, but that the whole of the anal canal should be empty and contracted by sphincter action, and that, as in the case of cardiospasm, the condition in the early stages terminates at the upper end of the sphincter, while in the later stages the upper portion may have dilated. Martin and Burden found that in 31 cases there was an abrupt change in the appearance of the mucous membrane between the sigmoid and the rectum.

Many theories have been put forward to explain the remarkable changes that are found. Barrington-Ward even quotes 13. Many of these attempt to show that there is a mechanical obstruction from the presence of a valve, kink, or volvulus, but there is no doubt that no such obstruction exists. No narrowing can be found post mortem, and in life simple and opaque enemata may be easily passed. The marked hypertrophy of the gut wall and the visible and active peristalsis make it evident that there is no paralysis. There is, therefore, a growing tendency to accept the view that the lesion is a neuromuscular fault. Treves stated that he believed some of the cases to be due to an error of innervation, a view that was elaborated by Hale-White and Shattock. The fact that the dilatation is sharply limited at the site of the sphincter below, and that after death the obstruction has disappeared, shows that the change is identical with that of cardiospasm and due to an error in the sphincter. As with the latter disease, Hurst believes that there is an achalasia rather than a spasm; the ease with which enemata may be administered would certainly support this view, the condition being due to a relative paralysis of the vagal impulses to the sphincter.

Symptoms.—In most cases the symptoms date from birth, but in others the obstruction is, as in the case of cardiospasm, apparently overcome by the hypertrophied muscle, and symptoms only appear as compensation fails. There is a steadily increasing constipation, at first easily relieved with aperients and enemata, but later only with difficulty. In some curious cases there are prolonged periods of relief during which the bowels are opened regularly. The attacks of constipation, however, steadily increase in frequency and severity until the bowels are only opened once every week or perhaps even only once in every two or three weeks. At this stage there is considerable abdominal pain of a colicky nature. As the disease progresses, the abdomen becomes distended until it is enormous and may cause some embarrassment of respiration (see Fig. 7).

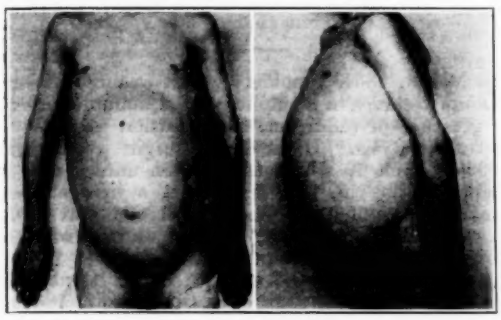
FIG. 6.

Idiopathic dilatation of the colon. Specimen from a boy aged 11.

In some cases the distension is uniform, but in others a localised area may be distinguished, due to the dilated pelvic colon. In this, hard scybalous masses may often be felt through the abdominal wall, and peristalsis of the gut wall is nearly always visible. Although the distension is so great the patients may for some years appear to be in remarkably good health, but later the evidences of pressure are increased, the lower ribs being expanded, the diaphragm and heart pushed upwards, and the veins compressed so that the legs are œdematous; there are visible and distended veins on the abdominal

wall and albuminuria is present. Occasionally, as in a case reported by Langmead, tetany may be present. In the later stages, attacks of subacute obstruction with increasing pain, absolute constipation, and vomiting occur. Thus, cases recognised in early life did not, as a rule, live to adult age. Of 24 cases studied by Crozer Griffith, in 1899, only three survived

FIG. 7.



Abdominal distension with Hirschsprung's disease in a boy aged 11.

childhood. Examination with the sigmoidoscope shows only an enormous dilatation of the pelvic colon, and there is no trace of any mechanical obstruction or valve. It is sometimes stated that a tight spasm of the anal canal can be distinguished, but in the 12 cases in my own series no abnormality could be made out. On X ray examination the enormous dilatation of the colon is often easily distinguished before any barium enema is given owing to the large amount of gas in the distended colon. A barium enema often does not greatly improve the picture, for the cavity is so large and contains so much fæcal material that the barium is badly distributed.

Treatment.—Until a few years ago it was believed that the fault lay chiefly in the wall of the gut, so that, although it was hypertrophied, it was failing to function in a correct manner. Hence, operative treatment was directed towards diversion of the contents from the affected portion of the gut. Discussion therefore centred around the relative merits of colostomy, ileocolostomy, and partial or complete colectomy. The two latter operations gave the most satisfactory results, and in some cases, as in two of my own series, appeared to bring about a complete cure. Ito and Soyesima found that of 21 cases of complete colectomy, 14 were cured, and Giacinto reports 80 cases of colectomy with 59 recoveries. It is probable that in these cases relief was gained owing to the fact that the contents of the pelvic colon after operation were fluid, and thus were more readily passed. The operation was, however, associated with a high mortality in patients often young and in poor health. According to more modern views, these operations were based upon a wrong conception of the pathology. If the cause of the obstruction is, as is believed, a spasm or an achalasia of the anal or the pelvi-rectal sphincter, the correct treatment would be to overcome this, either by forcibly and, if possible, permanently dilating it, or by removing the relatively overacting sympathetic impulses, and thus allowing the sphincter to dilate. Fullerton, being struck with the similarity of this lesion to cardiospasm, treated a boy, aged 2 years and 4 months, with forcible dilatation of the sphincters, at first with the fingers and later with a rubber bag filled with water. Five months later the child was free of all symptoms. This method is so simple, and brings the treatment into line with that of cardiospasm for which dilatation has been so successful, that it is worthy of further trial. Owing, however, to the well-known work of Royle, who, in his operations upon the lumbar sympathetic cord, found that a patient who had suffered with severe constipation was entirely relieved, attention has been more fully directed upon this line of treatment. In 1926, Bartle, and in 1927, Wade and Royle, advocated lumbar ramisection as a means of treatment. At the recent meeting in Winnipeg, Royle, Learmouth, and Wade all enthusiastically supported the method; Royle stating that it gave excellent results in all cases, and Wade reporting 14 cases with striking improvement in all but one.

Comment.

The conditions which I have described are not only of interest in that for many years they have led to much discussion as to their cause, but they direct attention to one of the most important problems of modern medicine. They all show a congenital and often an hereditary fault. In some the actual disease dates from birth, in others it is only the tendency which appears to be congenital. They also appear to be getting more frequent, so that together they now form a large proportion of all abdominal cases. With the control and consequent diminution of acquired disease there is no decrease, indeed there appears to be an increase in the congenital faults of the race. We hear to-day everywhere discussed the question of birth control, but what we, as a medical profession, must consider and discuss is whether there is not rather a need for compulsory birth control. It has always been a matter of astonishment to me that a race of people who will pay enormous sums for pedigree stock animals confine their attention, at great cost, entirely to environment when considering the benefit of the human species. Will the day come when it will be regarded as a criminal act for a couple to bear children before they are proved to be of good stock, and have shown that they are able to make some provision, either by insurance or investment, for the welfare of their children?

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DONATIONS AND BEQUESTS.—Among other bequests, the late Mr. William Law, of Clevedon-drive, Kelvinside, Glasgow, left £3000 each to the Glasgow Royal Infirmary, the Glasgow Western Infirmary, and the Victoria Infirmary, Glasgow; £1000 each to the Sick Children's Hospital, Glasgow, and the Broomhill Home for Incurables, Glasgow; £500 each to the Seamen's Hospital Society ("Dreadnought"), Greenwich, the Home for Infirm Children, East Park, Glasgow, the Largs Convalescent Home, the Kilmun Convalescent Home, and £250 to Glasgow and West of Scotland Seaside Convalescent Homes, Dunoon.—Mr. Herbert Samuel Thrower, of West Heath-avenue, Golders Green, left by will, in addition to other legacies, £2000 to the Hampstead General Hospital, for beds for the benefit of employees of his firm, and, conditionally, £500 for general purposes, and £1000 to the Metropolitan Convalescent Institution towards the upkeep of the Bexhill Convalescent Home. The ultimate residue of the property will be divided between the Metropolitan Convalescent Institution, the National Institution for the Blind, King Edward Sanatorium at Midhurst, the Children's Hospital, Great Ormond-street, and the Mount Vernon Hospital.

THE TOXICOLOGY OF THALLIUM.

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IN March, 1861, Crookes,[1] whilst examining some selenium residues in a sulphuric acid manufactory for the presence of tellurium, had occasion to resort to spectral analysis. Observing a bright green band (λ 5350) which up till then had been unrecorded, he concluded that he had discovered a new element which he presumed to belong to the sulphur group and to which he gave the name thallium, from the Latin "thallus," a green or budding twig.

Lamy[2] independently discovered the same substance in April of the same year, and in the following year was able to isolate it in a state of purity and determine its properties. He suspected from the first that its compounds were toxic, for whilst engaged on this research he suffered from general lassitude and weakness of the lower limbs. He administered thallous sulphate to a number of animals, but did not record the dose given. They all died, some more rapidly than the others; the symptoms which he emphasised were weakness, abdominal pain, loss of appetite, trembling, paralysis of the hind limbs, and difficulty in breathing. Crookes, however, did not believe that thallium was toxic, and reported that he had taken doses of one to two grains and had felt no ill-effects.

Since then many observers have experimented with thallium, and in 1899 Richet[3] published an article on its toxicity in which he stated that chronic poisoning was commonly associated with generalised muscular atrophy. This observer, according to Cushny,[4] was the first to record the epilating effects of thallium, although Sabouraud is usually credited with the discovery. About this time (1898) it first appears to have been used therapeutically, when Combemale[5] advocated the use of the acetate for the night-sweats of phthisis and recommended doses of 10–20 cg. He found no toxic symptoms, but noticed that its use was followed by a complete and rapid loss of hair. Jeanselme[5] in the same year reported loss of hair in a phthisical patient who received 0·27 g. in three days, and Guinard[5] reported a similar event after nine pills each containing 0·05 cg. Buschke,[5] in 1900, and Betman,[5] in 1901, succeeded in producing a similar effect in animals. Pozzi and Courtade[6] used thallium iodide in doses of 0·01 g. daily for syphilis and reported good results, but it is doubtful whether thallium has any specific effect in this direction.

About 30 years ago Sabouraud first started to use thallium as a depilatory in ringworm, but eventually came to the conclusion that it was too highly toxic and dangerous and abandoned it. In all probability the reason of his failure to get good results was the administration of too large doses, for he apparently did not base the dose on body-weight. Attempts have also been made to use thallium salts in the form of a cream, as a local depilatory, but Dixon states most definitely that unless thallium is absorbed it has no epilating action, and when applied locally

it has no effect whatever. After Sabouraud abandoned the treatment, it does not appear to have been used to any extent until Cicero,* of Mexico, in 1909 attempted to use thallium for ringworm. In 1918 he published a favourable report of 439 cases, and followed this up in 1922 with a further report. In Europe, however, the treatment has only been revived recently, and Buschke has elaborated a standard system of dosage for general use.

In 1914 Buschke [6] reported his first experiments on rats; he came to the conclusion that the alopecia produced by thallium salts was due to nervous influences, and later, in 1922, he suggested that the epilation was produced in some way through the ductless glands. In 1926 Buschke, Langer, and Peiser [5] treated a number of children suffering from ringworm and fixed the minimum dose for producing epilation at 8 mg. of thallium acetate per kg. of body-weight. The drug was given by mouth in a single dose, sweetened, and on an empty stomach, as they found that if it were taken with food epilation was not so complete. Buschke also emphasised the importance of vigorous local treatment during epilation.

This method of treatment is now widely used, and many observers have published their results. Dowling,[7] who was one of the first to use the method in this country, is of opinion that 8 mg. per kg. is not always sufficient to bring about epilation, and he recommends 8–9 mg. per kg., using 8·5 mg. generally and 9 mg. for dark-haired children who do not epilate so easily and in those cases where the tinea is most marked on the crown of the head, as the hair does not come out so readily in this region. In all cases the children are weighed nude, and a full clinical examination, including that of the urine, is made. If these precautions are carried out, it is stated that no toxic symptoms should appear. They occur, if at all, about eight or nine days after the dose; they take the form of joint pains in the lower limbs, loss of appetite, drowsiness, and hypochlorhydria. The administration of hydrochloric acid will generally correct the last condition, and as some degeneration of the thyroid and suprarenals has been noted in several cases, administration of these glands is suggested.

It is now universally agreed that it is unsafe to administer an epilating dose to adults or to children about 10 years of age. Recently the tendency has been to give the drug only to younger children. The younger the child the greater the tolerance, and a smaller dose per body-weight is, of course, required. If these points are observed the advocates of this treatment maintain that it is perfectly safe, and that any untoward symptoms are only due to a personal idiosyncrasy, an accidental overdose, or impurities in the drug, although there should not be the slightest difficulty at the present time in obtaining thallium acetate in a state of chemical purity, nor should it deteriorate in solution. With the increasing use of this drug attention has been directed to the mechanism of its characteristic action.

Dixon [8] is of opinion that it acts through the autonomic nervous system, and support to this theory is given by the findings of other workers—namely, that the hair of the scalp only is under the trophic influence of the internal secreting glands through the sympathetic nervous system, and therefore the hair of the rest of the body, including the internal two-thirds of the eyebrows and a fringe at the edge of the forehead, does not come out. Cortella [9] has experimented with white rats, giving them daily a very small quantity of the drug (1–2 c.cm. of a 1–50,000 solution of thallium acetate in milk) with the object of ascertaining if any changes occur in the central nervous system with this dosage. He is of opinion that there were changes and that they were proportional to the dose given, and although with minute doses body-weight increased, wasting always occurred with toxic doses.

* As we have not been able to obtain a copy of these reports, we are not in a position to state the number of toxic cases, if any, which occurred in Cicero's series.

Chemistry of Thallium.

In the periodic classification of the elements the position of the metal falls into group 3 which, except for boron and aluminium, contains some of the rarest elements. Group 3 is subdivided into two subgroups A and B, and it is to the latter group that thallium belongs. Although it has certain properties similar to those of boron and aluminium, thallium presents certain differences which rendered its correct place in the periodic classification a matter of speculation for some years. Thus the more stable salts are monovalent—i.e., Tl′ as opposed to the less stable trivalent salts (Tl′′′). Boron and aluminium only function as trivalent elements (B′′′ and Al′′′). Thallium, further, shows many chemical properties in common with lead, which is next to thallium in order of atomic weights (Hg: 200; Tl: 203; Pb: 207), especially in respect to the halogen derivatives; thallium, moreover, is a soft malleable metal like lead. The thallic (Tl′′′) compounds—e.g., Tl_2O_3, on the other hand, resemble those of boron and aluminium—e.g., B_2O_3 and Al_2O_3. There is also a resemblance to metals of other groups—e.g., silver, potassium, and mercury. It is noteworthy that thallium, from a toxicological point of view, shows a distinct affinity for nervous tissue, as will be seen in the cases under review, and the profound effect that this metal has on the central nervous system is especially noticeable in the three cases of poisoning which we have examined. In this respect there are many points of similarity to lead.

Thallium is used in the manufacture of optical glass when a high refractive index is required. It is also used in the production of tungsten lamps, and has photo-chemical and photo-electrical properties.

Three Cases of Poisoning by Thallium.

The three cases—A., aged 10 years; B., aged 7 years, and C., aged 5 years—were brothers, and attended a skin hospital in London on Feb. 28th, 1929. They were found to be suffering from small-spored ringworm of the scalp; this was confirmed microscopically. They were well-developed healthy boys and the usual medical examination was made. A. weighed 4 st. 4 lb., B. weighed 3 st. 13 lb., and C. weighed 3 st.

The drug was administered on March 14th, when each received a dose of a solution of thallium acetate which, by an error of the dispenser, was made up ten times too strong. It was intended to give the two eldest boys 0·25 g. or 3·9 gr. and 0·23 g. or 3·6 gr.—i.e., 8·5 mg. per kg. of body-weight. The youngest was to have received 0·18 g. or 2·8 gr.—i.e., 8·9 mg. per kg. of body-weight. Actually each received ten times this quantity—namely, 39, 36, and 28 gr. respectively.

The boys returned home and went to bed as usual at 8.30 P.M. feeling perfectly well. About one hour later B. complained of pains in the stomach and sore-throat, had a hard, sharp cough, and was very restless. A little later A. complained similarly, and both were unable to swallow when water was given them. They became drowsy and passed a fairly peaceful night, during which B. vomited a little. In the morning A.'s face was drawn and he complained that he could not open his mouth or eyes, and by this time the youngest was complaining in a similar manner. They all remained drowsy during the day, and about 7 P.M.

that evening B. seemed much worse. When the doctor arrived B. was dead and A. was tossing about with jerky convulsive movements; his eyes were closed but the pupils were widely dilated. Frothy mucus was escaping from the nostrils and mouth, and the breathing was of the Cheyne-Stokes type. The pulse-rate was rapid and the extremities cold. He lived only a few minutes.

The next morning the youngest child was admitted into Westminster Hospital under Dr. D. H. de Souza, to whom we are indebted for the following notes. The child was then in a semi-conscious condition; there was no vomiting or diarrhœa, but the throat was sore, with inability to swallow. The temperature was 97·6° F., the pulse-rate 120, and the respiration-rate 25. The eyes reacted to light, and there were rhonchi all over the chest. The child seemed to improve slightly during the first part of the night, but died suddenly about 4 A.M.

POST-MORTEM EXAMINATION.

We are indebted to Dr. W. D. Newcomb for the following notes.

The children A., B., and C. received such a large dose that death ensued relatively early, and one would expect the changes in the organs to be different in cases dying after a longer time. The lesions in these cases were severe parenchymatous degeneration in all the organs examined. There were slight variations in the three cases, but these are explicable by the differences in age. All had approximately the same dose per kg. of body-weight and, as might be expected, the two eldest died first with more acute changes in the various viscera. In the youngest, who lived three days, there was time for the degenerations to become more obvious.

The *stomach* in each case contained a little mucus and showed submucous petechial hæmorrhage. In all the *hearts* there was a remarkable degree of fatty degeneration with "tabby cat" distribution. This was most marked in the youngest child, who survived longest. In the child who died first the lesion was confined to the left side, but in the others it was present in both ventricles. A slight perivascular fatty infiltration and scattered leucocytes could also be seen in each case. The *livers* showed congestion and fatty degeneration situated in the centres of the lobules. The condition was most marked in the youngest child, and here there was also some peripheral fatty infiltration. The *kidneys* were congested and showed toxic changes which varied considerably in the three cases. In the middle child, who died first, the capillary engorgement was intense, the glomeruli were swollen, and a little fat was present in the ascending limb of Henle. Severe cloudy swelling and necrosis of cells was also seen in the convoluted tubules. In the youngest child the congestion was less marked, but more fat was present in the Henle tubules, and karyolysis of the nuclei in the convoluted tubules was prominent. The eldest child showed an intermediate condition. The *spleen* was congested and showed an excess of eosinophilic leucocytes in the pulp. This was most marked in the eldest, and probably indicated an eosinophilia in the blood. This has been noted in other recorded cases of thallium poisoning, but it is doubtful whether it is really due to the drug. It is very unlikely that such a change could occur as quickly as 29 hours after poisoning and, as many cases of ringworm show eosinophilia, this would appear to be the most likely explanation. The right suprarenal of the eldest child was available for examination, but no changes were found in it other than those accounted for by post-mortem decomposition.

It appears, then, that in large toxic doses thallium acts as a mild irritant to the stomach. It poisons the more highly specialised cells of the body, causing marked fatty degeneration in heart and liver and necrosis in the kidney. These changes are rather like those seen with the phosphorous group of poisons, but differ in that the fatty degeneration is most marked in the myocardium. In this respect thallium appears to be unique.

ANALYSIS OF THALLIUM IN VISCERA.

The estimation of thallium in viscera or urine presents no great difficulty. A weighed quantity of the material is broken up with hydrochloric acid and potassium chlorate by the method of Fresenius and von Babo and, when solution of all the material except the fat has been achieved, the liquid is filtered (well washing the precipitate), and the filtrate boiled until practically all the excess of chlorine has been driven off or removed by the sulphur dioxide method. If necessary it is filtered again, discarding the precipitate. To the filtrate ammonium chloride and ammonia are added until it is distinctly alkaline, and it is then again boiled. The precipitate, which consists of iron, calcium, and magnesium, chiefly in the form of phosphates, is filtered off and discarded. It may be advisable to add a small amount of calcium chloride solution to the liquid before the ammonia to ensure complete removal of phosphate.

The filtrate is then saturated with sulphuretted hydrogen or an excess of freshly prepared ammonium sulphide is added; a black precipitate is then formed. This precipitate is filtered off, well washed with dilute ammonium sulphide, and finally with distilled water. It consists of thallium sulphide (Tl_2S), together with traces of other metals which precipitate with sulphuretted hydrogen in alkaline solution and which have not been previously removed, but so far as toxicological analyses are concerned the only likely metal to be present—and then only in traces—is copper. When the precipitate is completely washed it is dissolved off the paper with hot dilute hydrochloric acid. The thallium is converted into thallous chloride (Tl Cl) and any trace of copper which was present as the sulphide remains behind, for this sulphide is insoluble in dilute hydrochloric acid. To the solution ammonia is added in slight excess and the liquid is boiled. If the process of separation has been complete no precipitate should occur at this stage. Any precipitate should be filtered off and discarded. The filtrate is then made very faintly acid with hydrochloric acid, and excess of potassium iodide solution is added. An immediate yellow precipitate of thallous iodide (Tl I) forms. As there is some tendency for thallous iodide to come down in colloidal form, the liquid should be boiled and allowed to stand for 12 hours.

The precipitate is then collected in a weighed Gooch crucible and is well washed, first with potassium iodide solution and subsequently with alcohol, until the washings give no reaction for an iodide. The crucible is then dried at 120° C. until constant weight is obtained. Although thallous iodide is very slightly soluble in water (1–17,000), it is almost completely insoluble in potassium iodide solution and in alcohol, so that filtration in the cold and washing with these reagents will give an accurate estimate of the amount present. The iodide after weighing may be confirmed as thallium by dissolving it in a solution of sodium thiosulphate, in which it is only dissolved with difficulty, whereas lead iodide is readily soluble. Finally, some of the iodide may be heated in a Bunsen flame on a platinum wire and the characteristic green line in the spectrum obtained.

AMOUNTS FOUND IN THE VISCERA EXPRESSED AS THALLIUM ACETATE.

—	Case A.		Case B.		Case C.	
	grains.	mg.	grains.	mg.	grains.	mg.
Stomach ..	0·24	15·6	0·11	7·4	—	—
Liver ..	0·9	58·1	1·33	86·2	0·74	48·2
Intestines ..	1·4	90·8	1·73	112·8	0·23	15·0
Kidneys ..	—	—	0·12	7·9	0·09	6·9
Urine ..	—	—	—	—	0·28	18·2
Total ..	2·54	164·5	3·29	214·3	1·34	87·4
Amount given	39	2527	36	2333	28	1814
Amount intended to be given	3·9	253	3·6	233	2·8	181

B, who died first, had eliminated less of the drug than A, who was given a larger quantity.

Dangers of Thallium.

Although the three fatal cases which have prompted the publication of this article were purely accidental and can in no way be used as an argument against the use of thallium in the treatment of ringworm (for regrettable incidents of this type have occurred with many drugs), a survey of the literature of the toxicology of thallium has made a deep impression on us, and we think that some useful purpose is served if a warning is given of the dangers of the drug.

In the literature, which is now fairly extensive, the following cases seem worthy of brief summary. Twiston Davies[10] gave thallium acetate to two sisters: F., aged 11 years, who received 8·5 mg. per kg., and M., aged 8, who received 8·75 mg. per kg. of body-weight. M.'s condition was normal throughout, and she epilated successfully, but F., although

she epilated normally, complained of pain in the knees on the twelfth day after the dose. By the sixteenth day the lower extremities were swollen, hot, and tender, with fluid in both knee-joints. A fit, followed by unconsciousness for two hours, occurred on the eighteenth day, and was succeeded by choreiform movements, with a temperature of 101° F. and acetonuria. A slow recovery was made in about one month. There was no history of epilepsy.

Fuld [11] reported a case in a boy of 12 who was given 8 mg. per kg. and who became ill two days later with pains in the lower extremities. No fit occurred, but he was in acute pain, lying in bed screaming, for some days. The acute illness lasted five or six weeks. During this time he suffered from diarrhœa, and four months later he was quickly tired, had a poor appetite, was easily agitated, and suffered from diarrhœa.

Bachkevitch and Prokoptchouck [12] reported a case of a man of 20 who received 8 mg. per kg. for favus. He was healthy, except for a slight enlargement of the thyroid. Albuminuria occurred on the same day, and by the third day he was ill with a temperature, rigors, difficulty in swallowing, and swollen and infected tonsils. He improved, and epilation commenced on the eleventh day. Fifteen days later he had a fit, and was excited, restless, and delirious; he bit his tongue. He developed a petechial eruption on face and neck. Owing to his excited state and to the development of hallucinations and delusions of persecution he was transferred to a mental clinic, but eventually made a complete recovery.

A somewhat similar case is reported by Peter, where a second dose was given because epilation after the first was not successful. Ritter and Karrenberg [13] report two cases where 8 mg. per kg. was given to two boys aged 6 and 5 years. About a week after the dose the whole mentality of the younger changed from that of a bright and happy child to that of a dull and tired child, and 15 days after the dose he developed a toxic rash with irritation. The hair subsequently grew very patchily and slowly. The elder brother's mentality changed in the same way and he had, in addition, a great deal of pain in the head. Epilation was never complete. One of us (J. M. S. S.) has heard of a similar case in this country.

Sir William Willcox has kindly supplied us with the following cases in which the epilating doses were repeated through a misunderstanding.

1. Two full epilating doses of thallium acetate were given at a week's interval to a child of 5 years. This was followed by nausea, collapse, and loss of consciousness for some hours. The child was subsequently ill with symptoms of peripheral neuritis, but eventually recovered.

2. Three full epilating doses were given at weekly intervals. Vomiting occurred after the third. The child was paralysed, but after some months recovered.

3. A child, aged 8, received two full epilating doses, but after some nausea and drowsiness recovered in 48 hours. As recovery was good a third dose was given. After the third dose drowsiness and coma developed. The patient remained in this state for several weeks and there was definite evidence of organic change in the basal nuclei. Nystagmus and squint and a double extensor response were present. The state of coma vigil persisted for some weeks, with low muttering delirium and incontinence of urine and fæces. The child improved but was found to be suffering from blindness and marked mental affection, but is, however, stated to be slowly improving.

FATAL CASES.

Accidental overdose has occurred on several occasions, and Buschke and Langer report a similar mistake to that in our series; the child received ten times the normal dose, and died in 24 hours. The most serious cases occurred in an orphanage in Granada. Here a large number of the children were affected with ringworm, and a dermatologist, having confirmed the diagnosis, decided to use thallium. Having no previous experience of the drug, he made the mistake of giving it to 16 of the older children of ages 7–14. This mistake, although likely to produce toxic symptoms, would not be expected to produce fatal results. They had the usual dose of 8 mg. per kg., and the drug was dispensed correctly, but the scales on which the children were weighed were afterwards stated to be inexact (to what extent is not stated). After three days the first child became ill and died the same night, and eventually 13 out of the 16 died, and at the time the account was written the remaining three were not expected to live. Although no details are available it seems likely that an excessive dose was given, but not one greatly in excess of the epilating dose, for many of the patients lived for about three weeks, whereas a large excess of the epilating dose kills in 24–30 hours.

Merkel [14] has described three fatal cases in which the children did not even receive their full epilating dose. The first case, 12 years old, was due to receive 0·336 g. (8·0 mg. per kg.), but actually received 0·033 g. every day for seven days—i.e., 0·233 g. On the seventh day he was taken ill with muscle pains, and he died six days later. The second case, 10 years old, was due to receive 0·196 g. (8·0 mg. per kg.), but received 0·03 g. daily for five days—i.e., 0·15 g. On the fifth day he was taken ill, and he died ten days later. The third case, aged 11 years, who had suffered from encephalitis, was due to receive 0·296 g., and actually received 0·2 g., taking 0·1 g. the first day and 0·033 g. on the three subsequent days. He was taken ill and died 14 days later. The post-mortem examinations on the three cases were described fully, but the only positive findings were extreme cachexia and lack of fat in all organs.

Accidental poisoning by thallium has occurred, and was not diagnosed until late in the illness. Ramond [15] reports that a young girl was taken ill suddenly with symptoms suggesting an acute abdomen, but no operation was performed. She became worse, with increasing abdominal pain and paralysis of the lower limbs; about a month later epilation gave the clue to the condition. For three months before the illness she had been in the habit of using on her face a cream for superfluous hairs which contained 2·5 per cent. thallium. Six months later she was still paralysed and the hair had not regrown. It is probable that sufficient of the cream had been swallowed to produce the symptoms.

Zelio-corn and zelio-paste containing 2·1 to 2·8 per cent. thallium are used fairly extensively as rat poisons in Germany, and have been responsible not only for accidental but also for a number of criminal cases. Greving and Gagel [16] record a case of a woman who attempted suicide by spreading about half a tube of the paste on bread and swallowing it. She was taken ill two days later with great pain and albuminuria. Epilation occurred on the twelfth day. The patient was ill for months with severe peripheral neuritis, tachycardia, pains in the chest, emaciation, achlorhydria, and amenorrhœa.

Haberda records two cases of murder by zelio-paste: the murder of a husband by his wife, and the murder of an infant by its mother. In the latter case an exhumation was made, and hyperæmia of the brain and fatty degeneration of the heart, kidneys, and liver were found. Kaps reports a case of murder in which the victim was given three tubes of zelio-paste in repeated doses. He became blind and died a few days later, the total amount of thallium given being about 2·25 g. Heuck and von Zumbusch have,

as a result of their considered experience, decided to abandon the use of thallium acetate.

Chronic industrial poisoning by thallium has been investigated by Buschke.[17 18] In a chemical works where thallium was isolated from pyrites residues the manager and five workmen fell ill after a few weeks' work, complaining of fatigue, loss of appetite, pains in the knees, and epilation. In all cases there was a marked eosinophilia and lymphocytosis. All improved on being removed from exposure to thallium, and in only one case did eye symptoms develop. (Details are not given, except that he was left with a posterior synechia of the iris.) In another factory employing six men, one man, after working for three months with thallium, showed double optic atrophy with loss of sight, eosinophilia, loss of knee-jerks, and lymphocytosis. Four men, after working two or three months, had albuminuria which, in spite of removal from exposure to thallium, remained chronic in two. These men also suffered from pains in the limbs and loss of hair. A third factory, where contact with thallium was only occasional, had no cases of poisoning, but some of the workers showed eosinophilia.

Conclusions.

As a result of these reports we are of the opinion that thallium acetate should not be used as an ordinary routine treatment for ringworm of the scalp. We have based this opinion on the following conclusions:—

1. Thallium in itself is a highly toxic substance showing a marked similarity to lead, both in its chemistry and in its toxic symptoms, and the far-reaching effects of the poison are much greater than is generally supposed.

2. It has a definitely selective action on all forms of nervous tissue, and it has been demonstrated that, even in infinitesimal doses, it causes slight degenerative changes in the brain cells of rats. It is therefore most unlikely to leave the human brain entirely unchanged, and it seems impossibe to be certain that it does not hinder further brain development.

3. The margin between an epilating and a toxic dose is extremely small and allows for no idiosyncrasies, whereas with X rays the dosage is very accurate, trouble is rare, and if a mishap occurs it is at least local.

4. Ringworm of the scalp is not in itself a fatal disease and, though often troublesome, can usually be cured by other means. It therefore does not seem justifiable to use such a powerful poison in an attempt to cure it a little more quickly.

5. It is quite easy to obtain thallium salts in a state of purity, and there is no especial reason why a solution which has been kept for some time should not be used. We do not believe that toxic phenomena were ever due to the use of an old solution.

Our thanks are due to Dr. W. Knowsley Sibley for permission to publish the three cases on which this article is based.

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EXPERIMENTAL INDUCTION OF TUMOURS

WITH BLAST-FURNACE TAR.

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The present experiments are the outcome of some investigations which were originally undertaken to discover the reason for the failure of certain tars to induce tumours.

The prevalent view concerning the carcinogenic action of tars is that those which are capable of inducing cancer contain certain "specific carcinogenic principles" and, conversely, that those tars which are ineffective are deficient in such principles. In a previous communication [1] an alternative explanation was suggested. It was found that an actively carcinogenic gas-tar could be almost completely prevented from inducing tumours by the addition of 0·1 per cent. dichloroethyl sulphide (mustard gas) to the tar, and that the inhibition was due to some action of the mustard gas on the animal, and not to any alteration of the constituents of the tar itself. These results suggested that the presence in certain tars of substances with an inhibitory action similar to that of mustard gas might be responsible for the failure of such tars to induce tumours. In other words, a particular tar might appear to be non-carcinogenic, not because it lacked those constituents which were responsible for the induction of tumours, but because the carcinogenic action of those constituents was masked by the additional presence of inhibitory substances.

In the present investigations it was proposed to test this hypothesis, using an extract of a blast-furnace tar as an example of a non-carcinogenic tar. The experiment proved unsuccessful, because this extract of blast-furnace tar, which was assumed to be non-carcinogenic, actually produced tumours when applied to the skin of mice. Up to the present, blast-furnace tar has always been considered to be entirely lacking in the power of initiating tumour growth, this view being based on both clinical and experimental evidence. Although epitheliomatous lesions of the skin are not uncommon among the workmen in the gas-tar industry, no such lesions have been observed among those who come into daily contact with blast-furnace tar (Legge [2]). There is no record at the Home Office of a case of epitheliomatous ulceration from blast-furnace tar, although 520 (with 79 deaths) have been reported from pitch and tar in the ten years 1920–29, and the total from pitch, tar, paraffin, and oil during the same years was 1151, with 296 deaths (Bridge [3]).

In 1923 Leitch [4] tried the effect of a Scottish blast-furnace tar on the skin of mice and, although the treatment was continued for eight months, he failed to induce a single tumour. Kennaway,[5] studying the

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carcinogenic action of different tars and tar fractions in great detail, also maintained that blast-furnace tar was free from carcinogenic action. Though emphasising the differences between the mode of production and chemical composition of gas-tar and blast-furnace tar, he concludes that "it is uncertain whether the inability of blast-furnace tar to produce cancer is due to the nature of the coal, to the temperature of carbonisation or to some reaction which is dependent upon the peculiar chemical conditions in a blast-furnace." In the most recent communication dealing with the subject, Kennaway and Hieger [6] state once again that blast-furnace tar is not carcinogenic, but they do not mention whether this statement is based on Leitch's original experiment or whether it is an outcome of similar experiments performed subsequently by themselves.

FIGS. 1 2 3 4

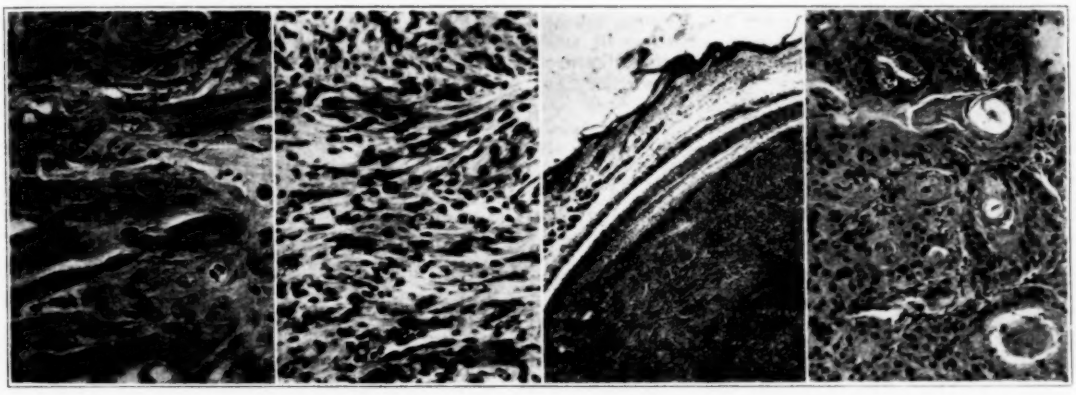

FIG. 1.—Mouse 74M5, painted with an ether extract of blast-furnace tar for 30 weeks. A squamous carcinoma, showing invasion of muscle. (× 220.)

FIG. 2.—Mouse 87Ma, painted once a week with the untreated blast-furnace tar for 18 weeks. A spindle-cell sarcoma. (× 225.)

FIG. 3.—A low-power view of the same tumour (Fig. 2), showing muscle between the tumour and the skin. (× 27·5.)

FIG. 4.—Mouse 91M3, painted twice a week with the untreated blast-furnace tar for 35 weeks. A squamous carcinoma. (× 115.)

Tumours Produced by the Tar.

In view of all this evidence in support of the contention that blast-furnace tar is non-carcinogenic, the discovery that an extract of such a tar could lead to the development of tumours in mice called for a more searching inquiry into the problem. Consequently, I decided to follow up this original observation, leaving aside the wider problem which I at first set out to investigate.

In the original experiment, 45 mice received weekly applications of an ether extract of a Scottish blast-furnace tar, which was prepared in the following manner. A simple ether extract of the tar was dried and treated with lime. This mixture was extracted once again with ether, the ether was evaporated, and the residue was employed for application to the skin. This ether extract was applied to a small area of skin in the dorsal region, the hair covering that area being cut short with a pair of curved scissors before each application, thus obviating the use of a chemical depilator.

Warts began to develop from the twentieth week of tarring, and, by the forty-fourth week all the surviving animals had acquired tumours. Altogether, out of the 45 mice which were originally subjected to the tarring, 25 developed tumours. On histological examination, seven of these tumours were found to be malignant. A photomicrograph of one of these is shown in Fig. 1.

The fact that an ether extract of the tar, after preliminary treatment with lime, was used in this experiment precluded me from declaring that the original tar itself was carcinogenic. It was possible that the chemical treatment might have been responsible for this action. It was necessary, therefore, to repeat the test, using the original untreated tar instead of the ether extract. This was carried out in the following experiments.

Fifty mice received weekly applications of the untreated tar, the procedure being otherwise the same as in the previous experiment. Unfortunately, the mortality was very high, but, in spite of that, five of the animals developed tumours. Four of these tumours were simple warts and the fifth was a spindle-cell sarcoma which developed under the treated area of skin, beneath the panniculus carnosus (Figs. 2 and 3). The last experiment was repeated, this time using 100 mice and applying the untreated tar twice a week. After 38 weeks 21 mice had acquired tumours. Nineteen of these tumours remained simple warts, whereas two developed into squamous carcinomata (Fig. 4).

—	Ether extract of blast-furnace tar.	Untreated blast-furnace tar.		Ether extract of gas-tar.
	A.	A.	B.	A.
Animals used ..	45	50	100	60
Duration of expt...	44 weeks.	32 weeks.	38 weeks.	30 weeks.
First appearance of a tumour ..	20 ,,	15 ,,	16½ ,,	11 ,,
Survivors bearing tumours—				
50 per cent. ..	35 ,,	—	38 ,,	20½ ,,
100 ,, ..	44 ,,	—	—	30 ,,
Total of animals with tumours ..	25	5	21	31
Animals in which tumours became malignant ..	7	1	2	6

A.—once a week; B.—twice a week.

The results of all three experiments are given in the accompanying Table, together with some results of a similar experiment with a known carcinogenic gas-tar.

The only conclusion is that the sample of blast-furnace tar used in these experiments, though not

as potent as gas-tar, is definitely capable of inducing tumours in mice. The discrepancy between these results and those obtained by previous workers suggested at first that the tar used in the above experiments was not a true sample of blast-furnace tar. It was, therefore, decided to obtain more accurate information about the tar as regards both the method of its production and its chemical composition.

Source of the Tar.

The blast-furnace tar was obtained from an iron works in Scotland. It was made from a battery of furnaces which were employing a mixture of approximately 88 per cent. splint coal and 12 per cent. coke. It has been frequently stated in the literature that Scottish blast-furnace tar is produced from splint coal, without any mention of coke. It would appear, therefore, that the present sample differed from those used by other workers in that coke was added to the splint coal in its manufacture. However, after consulting different authorities, including several ironworks where such tars are produced, it appears that the addition of a small percentage of coke to the splint coal is the rule in all Scottish blast-furnaces, and that this has been the practice for at least the last 20 years. To satisfy myself still further that the tar used in my experiments was an authentic example of blast-furnace tar, it was submitted to fractional distillation by Mr. H. D. Briggs, of the Yorkshire Tar Distillers, Ltd. The result of the analysis was as follows: 52 per cent. water, 6 per cent. naphtha, 20 per cent. light and heavy oils, 22 per cent. pitch. The report concluded with the statement: "This sample seems a true blast-furnace tar, but there is a large quantity of water." The presence of an excess of water (of which a certain amount is always present in blast-furnace tar) could not be held responsible for the carcinogenic action. It is therefore possible to induce tumours in mice with a genuine sample of blast-furnace tar, and, furthermore, blast-furnace tars in general can no longer be regarded as non-carcinogenic, though admittedly other samples may be inactive.

The fact that gas-tar and blast-furnace tar are both carcinogenic, despite the differences in their chemical composition, the nature of the fuel used in their production, the temperature of carbonisation, and the conditions of the respective distilling plants, must be considered of some significance, particularly in relation to the controversy on the "specificity of carcinogenic agents."

These results may also be of interest from the industrial aspect. So far no case of skin cancer arising from contact with blast-furnace tar has ever been reported. The workmen in the ironworks from which the present tar was obtained have been examined by a medical inspector of factories, and no case of epitheliomatous ulceration was discovered. It is possible that blast-furnace tar, though sufficiently potent to induce tumours in mice, may not be capable of having any effect on man. Even if it be assumed that any agent which is carcinogenic for mice must also be carcinogenic for man, it would still not be justifiable to presume that, because mice are susceptible to blast-furnace tar, therefore the workmen who handle that tar should necessarily develop cancer of the skin. It is possible that the workmen do not handle the tar sufficiently frequently or for a sufficient length of time for the condition to develop, particularly as blast-furnace tar appears to be less potent than gas-tar. At the same time, it must be realised that the regulations dealing with the necessary hygienic measures and medical inspection are by no means as strict for blast-furnace tar workers as they are for those who come into contact with gas-tar, pitch, paraffin, and oils. Therefore it is not unreasonable to imagine that, as a result of more careful medical supervision, cases of cancer due to blast-furnace tar might yet be found in those industries in which workmen are liable to come into intimate contact with the tar.

The tar extracts have been prepared in the biochemical laboratory of this department under the direction of Dr. H. J. Channon, to whom I am greatly indebted. I should also like to express my thanks to Mr. H. D. Briggs for the chemical analysis of the blast-furnace tar.

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CLINICAL AND LABORATORY NOTES

HÆMATEMESIS AS A SYMPTOM OF GASTRIC OR DUODENAL ULCER.

By Basil Hughes, D.S.O., M.B. Camb., B.Sc. Lond., F.R.C.S. Eng.,

SURGEON TO BRADFORD MUNICIPAL GENERAL HOSPITAL; HON. SURGEON TO BRADFORD CHILDREN'S HOSPITAL; HON. ASSISTANT SURGEON TO BRADFORD ROYAL INFIRMARY.

Some 20 odd years ago I was asked to see a man, 42 years of age, who was suffering from profuse hæmatemesis. He gave a very vague and unsatisfactory history of indigestion which did not fit in with the classical symptoms of either gastric or duodenal ulcer and unfortunately I was persuaded to operate upon him. I found no evidence whatever of gastric or duodenal ulcer and so the surgical history of this case finishes. This man is alive to-day and has had several gastric hæmorrhages since. Curiously enough, within the last year I was called to see his brother, who had suffered a severe hæmatemesis. He also had suffered from indigestion, which took the form of a discomfort only after meals. Examination revealed an enlarged spleen and a blood examination confirmed one of the primary anæmias. The day after the blood examination he sustained a fatal hæmatemesis.

During the last twelve years I have operated upon five cases for severe hæmatemesis and in only two of these cases was operation justifiable; for in three of them, despite the classical symptoms of duodenal ulcer, no ulcer existed, but the liver showed cirrhotic changes. In the other two cases there was a crater-like ulcer on the posterior wall of the stomach which was fixed firmly to the pancreas. Partial resection of the stomach was performed, but there was no evidence that hæmorrhage had occurred from the ulcer. It had taken place from numerous points in the inflamed tissues surrounding the ulcer, and again the liver was cirrhotic.

In nearly 25 years' experience I can only recall two cases of true hæmorrhage from an ulcer. Both patients died before surgical aid could be of avail, and post-mortem examination showed an erosion of the splenic artery. So far these findings fit in tolerably well with continental findings. I have encountered

in consultation, as one is bound to do, many cases of hæmatemesis in which the history and symptoms cannot satisfactorily be correlated with gastric or duodenal ulcer and which, in the quiescent periods, are negatived both by fractional meal and radiological findings.

Such experience shakes one's faith in hæmatemesis as a trustworthy symptom of gastric or duodenal ulcer, yet text-books still proclaim it and students are still taught it. If it is a symptom, it is a very rare symptom; such are my surgical and post-mortem findings. My own experience leads me to believe that hæmatemesis is a symptom that calls for the physician, for it has proved far more often the symptom of a medical rather than a surgical ailment. A surgeon friend of mine told me that he had operated upon a patient with hæmatemesis. He found a cicatrix at the pylorus and performed a gastro-enterostomy. An uncontrollable hæmatemesis followed and there was hæmorrhage from the operation wound. The patient died. There was no blood examination, but I feel sure this was a physician's case. Such conditions as hepatic cirrhosis, primary anæmias (insidious as they are), purpura (gastric epistaxis was not unknown in the near East during the recent war when purpura was prevalent), and other blood conditions must be excluded before a surgeon is asked to interfere.

A wise surgeon will always take a competent physician into his confidence before he operates upon a case of hæmatemesis.

A CASE OF SEVERE LEAD POISONING FROM DRINKING WATER.

By Norman Lorraine, M.D., D.P.H., F.R.S. Edin.,
MEDICAL OFFICER OF HEALTH, BENFLEET.

There appears to be no doubt that the following case was one of severe chronic lead poisoning, due to drinking water derived from a well which contained a dangerous amount of lead.

The patient, a childless married woman aged 33, came to live in the district in February, 1927, occupying a new house. Seven months later she had a three months' miscarriage and felt out of sorts. In June, 1928, she was operated on in London for cystic ovaries, both being involved. In September, 1928, she went to Cumberland for six weeks and felt much improved. Returning home, she again felt out of sorts and decided to go to Cumberland for some length of time. By this time she had swelling of the arms, legs, and fingers, was losing weight considerably, and was suffering from anæmia to such an extent that for about seven weeks she was confined to her bed and bedroom, but definitely improved during her stay in the north.

In March, 1929, she returned home and very soon afterwards began to feel ill, being admitted to a local hospital in July, 1929, suffering from loss of use of fingers and hands, and a certain degree of loss of use in legs and feet, extreme anæmia, amenorrhœa, and marked loss of weight. She remained in hospital for about thirteen weeks. The impairment in use of fingers came on gradually about June, 1929, beginning with the little fingers of both hands, the right being more involved than the left. The feeling of numbness spread from the little finger to the other fingers of both hands. On her discharge from hospital she returned to her house and became more anæmic, emaciated, and undoubtedly seriously ill. She was a lemon-yellow colour and suffered from severe constipation, colicky pains in the abdomen, a feeling of sickness, and wrist-drop in both arms.

She was admitted to a London hospital at the end of April, 1930. On her admission she was found to have punctate-basophilia. At the beginning of June, 1930, lead was definitely present in her urine, but her power of extension of the wrist showed no improvement, although her general health certainly became better. She still has dropped wrists and is very anæmic and constipated; her weight has dropped from 9 st. 10 lb. to 6 st. 3 lb., and she complains of tingling of the fingers, her hands showing trophic changes and flaccidity.

NATURE OF WATER-SUPPLY.

The domestic water-supply which, in my opinion, is responsible for her condition has its source in a surface well. The lead contained therein appears to be due to a plumbosolvent action of this water on the pipe system, which is lead.

An analysis of a sample of this water reports: "This is an exceedingly hard acid water containing a very excessive and dangerous amount of lead, practically all of which is in solution. Organically and bacteriologically the water is of a satisfactory degree of purity, but the amount of lead present is such as to render the water unsafe and unfit for drinking and domestic purposes."

I am indebted to Mr. E. C. Bilham, chief engineer to Southend Waterworks Company, for the following note: "The water referred to is drawn from shallow wells sunk in the sand and gravel—glacial deposits of the pleistocene period. The soluble salts in water drawn from these deposits vary greatly in different localities, and as these recent deposits include nearly all cultivated land, the water they absorb is markedly affected by manures and subject to surface pollutions; in addition, they are frequently very hard. These waters not infrequently act vigorously on lead, especially if they contain much carbon dioxide in solution. The presence, however, of silica as an alkaline silicate retards the action, and if the silica present approaches 1 part per 100,000 action is either entirely prevented or only occurs to a sufficient extent to coat the lead with a practically insoluble silicate which prevents any further oxidation and consequent danger from lead poisoning. The suitability for domestic purposes of water drawn from surface wells should always be regarded with suspicion until both chemical and bacteriological examination has shown the supply to be pure and wholesome."

I would refer those interested in the public health law aspects to Sects. 62 and 70 of the Public Health Act, 1875, and the Public Health Water Act, 1878, Sect. 3.

I should like to take this opportunity of thanking Dr. J. E. Jameson for the assistance he has given me in the investigation of this case.

ABDOMINAL TORSION OF OMENTUM.

By Douglas Robb, M.D. N.Z., F.R.C.S. Eng.,
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The paper by Mr. M. J. Smyth in The Lancet of Sept. 13th prompts me to record this case, which closely resembles several of his cases, and which falls into his class of pure intra-abdominal torsion of omentum.

A woman, aged 50, was admitted to Auckland Hospital on May 1st, 1930, complaining of abdominal pain of four days' duration. The pain was on the right side, and stabbing in character. It had been intermittent but became continuous and more severe six hours before admission. She had anorexia, but no vomiting. Her bowels were regular, and she did not suffer from dyspepsia. She had had a severe attack of right-sided abdominal pain with diarrhœa and vomiting one month before. She had borne three children.

Examination.—Temp. 97·6° F., pulse-rate 100, respirations 18. A stout woman in some distress. Tongue coated. Nothing abnormal was found in the chest. The abdomen was generally tender, but the maximum tenderness was found in the right iliac fossa and just above it. No definite rigidity could be made out. No mass was felt. A diagnosis of acute appendicitis was made, and immediate operation carried out.

Operation.—Under general anæsthesia the abdomen was opened by a median pararectal incision below the umbilicus. A little blood-stained fluid escaped on opening the peritoneum. The appendix was found to be normal. On further exploration a purplish irregular mass of omentum, half the size of a closed fist, was found arising from the transverse colon near the hepatic flexure. It had become twisted 540 degrees in a clockwise direction on its pedicle. It was not adherent to any other structure. The twist was undone, the pedicle transfixed and ligated, and the mass removed. The abdomen was closed as usual.

Progress was uneventful until the fourteenth day when the patient reported a sudden sharp pain in the right side of the chest. The temperature reached 99° on the next two days. The trouble soon subsided, and she was discharged well on the twenty-fourth day. The pain was attributed to a small pulmonary embolism.

I am indebted to Mr. Kenneth MacCormick for permission to publish these notes.

CENTRAL ASSOCIATION FOR MENTAL WELFARE.

CONFERENCE IN LONDON.

A CONFERENCE organised by the Central Association for Mental Welfare was opened on Dec. 11th by the Minister of Health. The chair was taken by Sir LESLIE SCOTT, and the subject of discussion was developments in mental health work under the new Act. At a luncheon held in the Hotel Russell Mr. L. G. Brock, chairman of the Board of Control, was the guest of honour; he also took the chair at the afternoon session, when there was a discussion on

Social Services and Mental Hospitals.

The CHAIRMAN said that the social worker might be looked upon as the expert assistant of the psychiatrist or as the friend of the patient; although the two rôles were not necessarily incompatible, views on the training required would depend on which rôle was under consideration. He thought it possible to over-emphasise the necessity for prolonged training; it was essential to get the right type of worker, one on whom the patient would look as a friend. From the patient's point of view the untrained voluntary worker might be more acceptable than the professional. Efficiency was less vital than sympathy. There was a wide scope for this type of worker inside the mental hospital. The Board of Control had no wish to see any uniform organisation rigidly enforced all over the country; the scheme must be adapted to local conditions.

Dr. THOMAS BEATON said that the central point of the social service would be the clinic, and that the mental hospital was but one of its side issues. In mental or nervous disorder the whole life situation of the patient was most closely bound up with the illness, and a survey of the life and environment of the patient was an essential part of the history, as a change in environment was often an essential part of treatment. The clinic must be run as a public utility service; it was not merely a medical matter, but dealt with every kind of sociological problem. No doctor could undertake the work without social assistance. The whole scheme should be under the supervision of the superintendent of the mental hospital, and comprehensive records should be kept. A close liaison must be maintained with the probation service, the school medical service, child welfare centres, and other social services. A hundred and one details needed attention, and the only satisfactory source of the necessary help was either a specific department under the local authority or else the mental welfare association. The Mental Treatment Act and the Mental Deficiency Acts must essentially be worked together. In time the mental health service would become one of the most important factors in the well-being of the community. The best training for the voluntary worker was a practical one. The ideal worker would know nothing whatever of psychology; she would sit in the clinic and listen, her business being to note facts and not to express an opinion. No matter how difficult the problem, something had to be done to help the patient.

The Training of the Social Worker.

Miss ST. CLAIR TOWNSEND discussed the types of patient likely to benefit by social service: unstable children and adolescents and adult cases of "breakdown"; patients in mental hospitals or observation wards; and those discharged or on licence. The worker should be experienced in general social work and have had a specialised training in child guidance, mental deficiency, and work for adults. There was now a year's post-graduate course at the London School of Economics. It was most important that after-care should be in the hands of the same worker as had become a friend of both patient and relatives while the former was in hospital. Although the requisite attributes of character sounded ideal—tact, balance, patience, humour, and receptiveness—all of them, save perhaps humour, could be acquired through training and experience. Without training the most gifted person could not be the right kind of worker. In America they felt that the use of untrained workers had been harmful to the work. Any scheme evolved should be unitary and elastic and should ensure continuity.

Dr. G. W. JAMES described the history and work of the Mental After-care Association, and illustrated the imperative need for skilled guidance on discharge from mental hospitals, and the invaluable prophylactic help afforded by the Association in out-patient departments. After-care and pre-care work of this kind was of the utmost value. He agreed with Miss Townsend that a certain amount of training was essential; women did the work very much better than men. The worker should spend some months in the almoner's department of a general hospital, should be familiar with mental hospitals of every type, and with child guidance, and should have experience of some sort of general social work, such as the Charity Organisation Society. He agreed with Dr. Beaton in praying that the social worker be delivered from a knowledge of psychology. It was more important for a home visitor to know the names of the children than the name of some complex that might afflict the mother.

Dr. A. A. W. PETRIE urged the importance of a unified service including both normal—as in child guidance and the problem of the social inefficient—and abnormal. The problem extended from the mild neurotic to the psychotic for whom institutional care was inevitable, and in every grade the psychiatrist needed the help of the social worker, on whom the success of the out-patient department largely depended. He thought the general sense of the doctor and other workers could be trusted to deal with or get rid of the person who dabbled in psychology. He stressed the importance of personal contact between social worker and medical staff. By the prevention of mental disorder the social service would stand or fall, and in intelligent prevention lay the hope of advance in mental hygiene.

Dr. LETITIA FAIRFIELD said she had been bewildered to hear a distinction drawn between efficiency and sympathy, and had only understood it on hearing that women were better than men at the work. The male sex always thought women were using tact and sympathy and womanly charm when they were using sheer hard experience and training. The poor appreciated more than anyone the value of efficiency; no one was more cordially disliked in the homes of the poor than the merely sympathetic person. Associations that made a success of home visiting owed their success to the fact that their workers were willing to undergo hard practical training. This was an extremely difficult and highly technical job and must be learnt by anyone who was to be of any value, either to doctor or patient. The individual who had been to a few popular lectures or read a few popular books on psychology was to be dreaded, but the training in psychology given at the London School of Economics course, for instance, was not to be

deprecated. The success of the Act would depend very largely on the social service. Without it the clinic was likely to be much more interesting for the doctor than useful for the patient.

A brief discussion followed.

On Friday morning the chair was taken by Mr. R. C. MORRISON, K.C., and Dr. E. O. LEWIS read a paper on

Ascertainment of Mental Defectives.

He said that ascertainment was looming large in the activities of local mental deficiency authorities at the present time. The numbers were so great that, even when the local authority had made adequate colony provision for the younger defectives, there would still be considerable need for accommodation in institutions for older defectives, and those in receipt of outdoor relief should be ascertained in order that they might attend occupation or handicraft centres. The defectives living in the general community presented considerable difficulty; the criteria for determining the kind of care they needed were hard to fix. It was no exaggeration to say that the retarded children were the most neglected group in the educational system. Cöoperation between the education officer and the school medical officer was essential, and the best person to make a survey was the educational psychologist. He thought that a survey to estimate the retarded children in a school population of 10,000 could be made in three or four months at a cost of about £400. The Wood report had estimated that there were nearly 9000 imbeciles attending day-schools, doing great harm both to themselves and to the system.

Mrs. HESTER ADRIAN read a paper on guardianship. Dr. Lewis's recent inquiry, she said, had estimated that about 80,000 defectives could be left in the community. These would not all need the same amount of care, control, or training. The four forms of community care available were voluntary supervision, statutory supervision, guardianship, and licence. Voluntary supervision, the most lax of the four, could be applied, Dr. Lewis had estimated, to rather more than half the cases. Statutory supervision was particularly suitable for low-grade cases in satisfactory homes who needed training. The chief difficulty in the way of guardianship was the stringency of the regulations, which alarmed parents and foster-parents; this might be overcome by making the local authority the statutory guardian, with a guardianship officer to select foster-parents and supervise them. Guardianship in this form would differ very little from licence and might be more popular. Suitable guardians could be found if carefully sought, and many difficulties could be overcome by unity of control and coöperation between all bodies concerned; a full-time guardianship officer should be appointed where possible.

A discussion followed.

On Friday afternoon the chair was taken by Sir BASIL BLACKETT, and Dr. LANGDON-DOWN spoke on the need for an inquiry into the

Causation and Prevention of Mental Deficiency.

He pointed out the drawbacks of a Government inquiry as a form of machinery for inquiring into this subject; it was a lengthy process and legislative measures followed it but slowly. He maintained that the Wood report showed that the problem of mental deficiency was thoroughly understood in its main aspects and justified cautious progress on the lines suggested. Everybody was agreed that it was undesirable for defectives to become parents, and the proposal made by those in favour of sterilisation was that it should be made lawful for medical practitioners to carry out sterilisation, with consent, under proper safeguards. This facility need not await a further inquiry, did not obviate such an inquiry, and might well lead to the provision of valuable evidence. It was an essential step before any further advance could be made. In the cases for which sterilisation was advocated, ordinary contraception methods were inapplicable. Both the Wood report and the last report of the Board of Control had spoken of sterilisation as advantageous in certain cases. Who was to say that the effect of cutting off at the source even a few families of defectives would produce no appreciable result in the long run? Surely the time had come to seek the power to use one of the admitted modes of stemming the "racial disaster" of mental deficiency. Proof of the results of sterilisation could only be obtained as the result of trial, and such trial could only be made when the procedure was sanctioned by law. Whereas sterilisation was a real preventive of procreation, the regulation of marriage and safeguarding were not. Sterilisation was not, of course, anything but a supplement to segregation; it would be particularly useful for higher-grade defectives and those sent home on long licence. Dr. Langdon-Down hoped that the facility would be granted without awaiting the outcome of another inquiry.

Dr. C. P. BLACKER supported the plea for sterilisation, and said that the whole problem touched upon delicate preconceived opinions. Any investigation would therefore have to be very thorough and its results absolutely above suspicion if unanimity were to be attained. It would therefore take a long time. If the prevention of feeble-mindedness were to be taken seriously some steps must be taken to limit the fertility of the "social problem" group—one-tenth of the population of the country. To this group segregation, regulation of marriage, and birth control were inapplicable; sterilisation was the only method. At present the group resorted to an enormous extent to abortions; the possible effect of abortifacient methods on the production of secondary amentia was worth consideration. The child was very likely to be affected by poisons, interference with blood-supply, or direct pressure. Sterilisation would thus be a measure of prevention for secondary as well as for primary amentia. The experience of birth control clinics suggested that numbers of the social problem group would avail themselves of sterilisation; at present it was extremely difficult, if not impossible, to obtain sterilisation for a patient who could not afford to pay, though easy for those who could. The last thing the Eugenics Society wanted to do was to plunge into legislation which would subsequently have to be withdrawn; it wanted to get the thing going on a very small scale to obtain some results to study.

ARGUMENTS AGAINST STERILISATION.

Dr. A. F. TREDGOLD argued the point of view of those who wanted a full and careful survey of the subject before anything was done. Mental deficiency, he said, would not be appreciably reduced in extent or cost by sterilisation; only a small proportion of defectives were produced by defective parents—about 5 per cent., he thought, but nobody knew, and knowledge on this point was the crux of the whole question. He protested against the way in which the public had been misled on this matter. A reduction of 5 per cent. might be better than nothing if it could be obtained without risk, but in the present

state of our knowledge the risks were too great. It was hard to select the case suitable for return to the community; there was a very real risk of promiscuity and spread of venereal disease among girls in villages and small communities if they were known to be sterile; it would be very difficult to frame regulations; there would be a danger, if sterilisation were legalised, that local authorities would attempt to use it to save the expense of institutional accommodation; legalisation of sterilisation might well delay rather than hasten the solution of the problem, for the general public would think it had been solved. Mental deficiency was the final manifestation of a pathological change in the germ plasm brought about by environmental influences, but the change did not always cause mental defect. We knew little about the factors responsible for the germinal change, and could not recognise carriers. If every defective and carrier could be eliminated to-day a new crop would soon appear.

Dr. F. C. SHRUBSALL pleaded for a thorough investigation into the proportion of the feeble-minded who could be said with certainty to be cases of secondary amentia. A full family history from the grandparents downwards would give a great deal of information about the methods of inheritance of deficiency. The standard of mental efficiency had risen with standards of living and custom; it was important not to label as deficient those who were only examples of a lower grade of culture. It was extremely difficult to get hold of a defective; the penalties on parents were seldom enforced. Confusing talk about sterilisation would only hinder the ascertainment officer in his work. The higher the grade of the defective the more difficult it would be to conduct a case if it became known that certification might convey a risk of subsequent sterilisation. He feared the effects of premature action. It would be no gain to the nation to sterilise 100 defectives a year and lose 200 or 300 who might have been segregated. It was essential to have public opinion behind any attempt at legislation. A commission or committee might ensure that opinion.

Dr. F. D. TURNER said that nothing whatever was known about the causation of mental deficiency. Genetic experiments on flies were not applicable to human beings. It seemed impossible that the hotch-potch of conditions known as mental deficiency could be due to a single cause. Some authorities held that hardly any mental defect was due to heredity, and in Denmark they had come to the conclusion that 80 per cent. was due to preventable causes. At his own institution Dr. Turner had found that only 2½ per cent. in each generation was due to direct inheritance. It was easy to blame heredity instead of doing what could be done to alter preventable causes. Fifty per cent. of amentia could probably be prevented with a little more public health knowledge. He agreed with Dr. Tredgold that any measure of sterilisation would only prevent the careful inquiry that the subject needed, and with Dr. Shrubsall that the Eugenics Society spoke with two voices. He admitted that a few defectives were detained in institutions only because of the fear of their having children, but it was less than 1 per cent. Cases came back from licence through sheer failure to get on in the world. He was convinced that a sterilised defective girl would find it almost impossible to be moral. Any measure of sterilisation would prove the thin end of the wedge. In America it was becoming merely a means of hitting anyone you did not like.

Dr. H. B. BRACKENBURY argued in favour of the appointment of a committee or commission. He did not regard such a body as a suitable implement for research, but thought it would do something which ought to be done: gather together information and set it forth in an authoritative manner. The latest knowledge on deficiency and heredity should be collated and set forth. The general public knew practically nothing, and even the interested intelligent section were largely speaking in the terms of ten years ago, so great had been the recent advance in this field. He put some questions which he would like the commission to answer. What was the common level of intelligence in the population to-day? Most people placed it too high, and on the answer to this question depended the definition of mental deficiency. How far was it true that the families of defective parents tended to be larger than the average? This was a legend that seemed to have little foundation. Did that proportion who could be trusted in the community behave themselves socially and sexually in as decent a manner as the rest of the population or not? On what lines could genetic experimentation take place? He no longer agreed with those who wanted to legalise sterilisation as a preliminary step.

Mrs. C. B. S. HODSON said that Punnett's figures on elimination of defect by sterilisation were based on a number of facts no longer accepted, and Fisher's corrections had shown that there would be a decreasing elimination, complete elimination being put off for hundreds of generations. Recent Continental figures and pedigrees showed that deficiency was of many kinds depending on many factors, but that certain of these factors were dominant, not recessive. This made the prospect of elimination much more hopeful.

Mrs. NEVILLE ROLFE did not think that venereal disease would be increased by sterilisation. In California it had not, because the social care had been continued. Sterilisation could never be an alternative to social care; it seemed to be assumed that the public in this country was too stupid to realise this, but she questioned whether we were so unintelligent. A great problem was the amount of defect propagated by high-grade classes not under social care.

Father J. B. BAGSHAWE said that the Catholic Church regarded the prevention of procreation as a grave sin, the guilt of which must be shared by everyone concerned in the operation. The Catholic body in the country would oppose the Bill by every means available. He was sure that the measure would defeat its own object.

Dr. BLACKER, in reply, emphasised again that the advocates of sterilisation did not regard it as a "solution"; the problem would never be solved. Much about human beings had been learned from animal experiments; Mendelian ratios, for instance, extended right through the animal and plant world. If two-thirds of the defective population were to live in the community, sterilisation might be a useful adjunct to social care.

PAYMENT OF A HOSPITAL STAFF.—In consequence of a request by the medical staff of the Malton, Norton, and District Hospital that they should be paid for their services, the monthly board has prepared rules which require that both subscribers and non-subscribers shall pay for medical attendance, except in proved necessitous circumstances. The request was made because patients who could afford to pay refused to do so, and took advantage of free treatment not intended for their benefit. A scale of charges is to be fixed in consultation with the medical staff, but the new arrangement is subject to the sanction of the annual meeting of subscribers.

REVIEWS AND NOTICES OF BOOKS

Modern Psychotherapy.

By EMANUEL MILLER, M.A. Camb., M.R.C.S. Eng., Honorary Psychopathologist, West End Hospital for Nervous Diseases; Psychiatrist, Child Guidance Clinic of the Jewish Health Organisation, London. London: Jonathan Cape. 1930. Pp. 131. 5*s*.

Dr. Miller has tackled an extremely difficult problem courageously and with a considerable measure of success. He surveys first the general principles of psychotherapy and of the chief methods used, including the three leading schools of analysis, hypnosis, suggestion, auto-suggestion, and persuasion. He manages to give a very fair account of each of them, despite the innumerable pitfalls that await the feet of anyone who tries to be eclectic in these matters. Freudians may, perhaps, feel that the importance of the pregenital or polymorphic stage of sexuality is somewhat lightly sketched and the followers of Adler—at any rate in this country—may complain that insufficient stress is laid on the principle of studying the individual as a whole, from every possible angle. A certain amount of bias on the philosophical side of Jung's teaching is inevitable, seeing that the Zürich school has written practically nothing about its practice. The suggestion, however, that the "pill" presented to the patient of Jung is any less bitter in practice than that offered to the patient of Freud, or that in practice the Jungian physician ever attempts to direct the patient's path from a "Pisgah height" will hardly be acceptable to members of this school. Any salvation that is to be of any use must inevitably be found by the patient himself, as Dr. Miller recognises in his criticism of the "short-cut" methods of hypnotism and suggestion.

The chapter on the application of psychotherapy inevitably leaves the reader with the feeling that a book on this subject for the general practitioner has yet to be written. Dr. Miller's guide-posts are undoubtedly useful, but they leave much unsaid. There is all the difference in the world between the position of the practitioner who has read this book and that of one who has read a corresponding book on, say, some recent development in surgical technique. In the latter case he is not only told the history and present position of the technique; he is—or can be—also told just how and how far he can apply it himself and what cases should be referred to a specialist. Perhaps it is impossible to perform this service for psychotherapy at the present time, and for two reasons. One is that many psychotherapists are too devotedly wedded to their own particular theory and method; the earlier part of this book shows that Dr. Miller at least is not one of these. The other is that British practitioners in general lack any elementary background on which an author could build. In many American medical schools students are taught psychology by lecture, and are required to make a character study of their own personality and emotional trends and a detailed investigation of one patient, apart from the usual out-patient and ward teaching in psychological medicine. On such a foundation can be built post-graduate instruction which will be really helpful. The practitioner of the future will, we trust, be taught how to anticipate and prevent just those conditions which Dr. Miller lists as suitable cases for psychotherapeutic treatment. Meanwhile his book marks an important advance. He writes clearly and simply, and has compressed a great deal of information into a handy little volume which will be of interest to practitioners and psychotherapists alike.

Laboratory Medicine.

By DANIEL NICHOLSON, M.D., M.R.C.P., Assistant Professor of Pathology, University of Manitoba. London: Henry Kimpton. 1930. Pp. 433. 28*s*.

THIS book differs from most manuals on clinical pathology in that the author makes a real effort to explain the rationale of and therefore the indications for the various diagnostic procedures which he describes. To give a complete and reasoned explanation of all laboratory diagnostic procedures would require a bulky treatise covering most of the field of general medicine, medical bacteriology, and pathology. The author has used great skill to get as much information as he has into 433 pages; in fact so well has he succeeded that a danger arises that the reader may regard his book as containing all the pathology that he need know. The work is up to date and contains descriptions of many procedures which have not previously found their way into text-books. The use of the blood groups in the determination of non-paternity is described; simple rules are given for the estimation of the basal metabolism rate, and sections are devoted to the collection and use of human immune sera against poliomyelitis and measles. A useful section is that describing Terry's method for the rapid diagnosis of histological sections, which has hitherto only been available in this country in the columns of the *Journal of Pathology and Bacteriology*. In the section on blood transfusion the author perpetuates the old superstition that even when matching has been performed the determination of the group of donor and recipient is still necessary; his statement five cells per c.mm. constitutes even a high "normal" for cells in the cerebro-spinal fluid is misleading. On the whole, however, the information given is accurate and well set out, and the book can be commended to students, practitioners, and laboratory workers who wish to know the full scope of laboratory diagnostic measures at the present time.

The Hair.

By W. J. O'DONOVAN, O.B.E., M.D., M.R.C.P., Physician to the Skin Department and Lecturer on Dermatology at the London Hospital; Lecturer at the London School of Dermatology, St. John's Hospital. London: J. and A. Churchill. 1930. Pp. 218. 12*s*. 6*d*.

IN the preface to this book on trichology Dr. O'Donovan mentions the neglect which the subject has suffered at the hands of the medical profession, with the consequent rapid increase of unqualified persons who claim to give expert advice on it. His aim has been to present the current teaching of dermatologists with regard to the hair. Beginning with the arrangement and pigmentation of the hair, he passes on to discuss ectodermal defects, the development and replacement of fœtal hair, and the abnormalities of development which may arise at various stages. The fifth chapter is devoted to alopecia due to scarring, and the sixth to seborrhœa of the scalp with its complications and treatment; syphilitic alopecia is discussed at length in a separate

chapter, with a reference to possible mistakes in diagnosis. In a section on the public health aspect Dr. O'Donovan gives a list of simple rules for the hairdresser attending institutions which would, if followed, prevent the spread of infective conditions; he also quotes the regulations and recommendations for the conduct of hairdresser's saloons issued by the Corporation of London. The composition of hair dyes in general use is given, and the treatment of parasites of the scalp described; the eleventh chapter deals with trichorrhexis nodosa, and the next five chapters with various types of alopecia, including those produced experimentally by thallium, inoculation, and light treatment. Ringworm of the scalp, hypertrichosis, and pseudo-alopecia form the subjects of the last three chapters of the book. The illustrations are clear and well chosen.

Practical Prevenception.

By WILLIAM J. ROBINSON, Ph.D., M.D. Hoboken: American Biological Society. 1930. Pp. 170.

THIS book is written for the medical profession only, and is especially adapted for American readers. The author is well known as a publicist, and as one of the first to advocate that medical men should interest themselves in the practical aspects of birth control. His influence in shaping American thought on this question has been felt for many years, and this book is the fruit of his long practical experience. Unlike most workers in contraception, Dr. Robinson believes very little in the efficiency of occlusive pessaries. He considers that the most efficacious method is a jelly containing a spermaticide. "It makes little difference what antiseptic or acid is used in the jelly. . . . In my opinion, a jelly containing boric acid, chinosol, and lactic acid is the best." Prescriptions are given for different jellies and suppositories which should prove useful to those medical men who have not facilities for obtaining patented articles, or whose patients cannot afford to buy them. It is contrary to American law to send contraceptives by post. In the opinion of most observers, the value of a properly fitting pessary is greater than is conceded by Dr. Robinson. It would also seem that the violence of his condemnation of the Gräfenberg ring is hardly justified by the knowledge that is as yet available of this method. The Gräfenberg ring is still in the experimental stage, and may be shown to have a value in carefully selected cases.

Diagnostic et thérapeutique électro-radiologiques

des maladies du système nerveux.

By A. ZIMMERN, Professeur agrégé à la Faculté de Médecine de Paris; Directeur de l'Institut municipal d'Electro-Radiologie; and J. A. CHAVANY, Chef de Clinique à la Faculté de Médecine de Paris, Médecin de l'Institut municipal d'Electro-Radiologie. Paris: Masson et Cie. 1930. Pp. 654. Fr.120.

WRITTEN primarily for the neurologist, Prof. Zimmern and Dr. Chavany have compiled an interesting book, the chief feature of which is the necessary collaboration between radiographer and electrotherapist in the diagnosis and treatment of diseases of the nervous system. The book is divided into four parts, the first dealing with electrodiagnosis in all its aspects. The second, devoted to radiographic diagnosis, is well illustrated and enters fully into the technique of the injection of gas into the peritoneum, and of the subarachnoid and epidural injection of lipiodol. The third part describes various methods of treatment, and in the fourth and far the longest portion the authors discuss in detail all the diseases of the nervous system, taking, in turn, their clinical aspect, electrodiagnosis, and choice of treatment. This portion is again fully illustrated by radiograms, some of which might have been dispensed with, and their place given to illustrations of the technique of the different treatments described. The authors make no extravagant claims for the various methods, but give a well-balanced and impartial consideration to each in turn.

Indian Journal of Medical Research.

THIS issue (Vol. XVIII., No. 1, July, 1930) contains 35 separate papers on very various subjects.—J. A. Sinton reports on various species of the genus Phlebotomus, including the female of *P. nicnic* Banks, 1919, and some new specimens from Africa.—A field method for estimating salinity of water in mosquito-breeding places is also described in conjunction with N. D. Kehar.—R. B. Lloyd and L. E. Napier record a series of interesting observations on the blood-meal of sandflies investigated by means of precipitin antisera. *P. argentipes* and *P. papatasii* fed almost exclusively on the blood of cattle and man, but when both were available the blood of cattle was preferred. Their observations provide little evidence in favour of the theory of kala-azar transmission by sandflies.—J. Taylor, S. D. S. Greval, and U. Thant consider the incidence of bacteriophage in bacillary dysentery and cholera and the effects of treatment with therapeutic phage. A parallel control series was used throughout. They conclude that bacteriophage is neither essential to recovery nor an effective therapeutic measure.—T. B. Menon discusses the intestinal findings in 800 autopsies in Madras; 60 per cent. showed chronic colitis or chronic diarrhœa, the lesions strongly resembling those of chronic dysentery.—L. Dunbar and E. D. Stephens have made an analysis of the types of dysentery of the Madras district. Bacillary outnumbers amœbic dysentery by about 5 to 1, while the commonest causal organism proved a bacillus of Flexner type.—L. Wills and S. N. Talpade continue their report on the pernicious anæmia of pregnancy. They suggest that relative deficiency in vitamins A and C, or some factor associated with this deficiency is of ætiological significance, and think the proportion of fat and vitamin B in the diet may play some part in determining the incidence of this disease in populations generally short of vitamins A and C.—B. M. Das Gupta writes on the differentiation of *Leishmania tropica* from the parasite of dermal leishmanoid; the former grew more rapidly, but true lateral outgrowths were not seen.—T. A. Hughes and K. S. Malik studied the glucose and lævulose-tolerance curves in hospital patients suffering from various diseases, excluding diabetes and other endocrine disturbances. The curves proved abnormal in almost all cases, the blood-sugar being high (i.e., above 120 mg. per cent.) in 52 out of 78 cases.—A microchemical method of detecting urease within tissue is described by P. N. Sen, while K. R. K. Iyengar and W. A. Beer record Part I. of their studies on the value of etherised sheep vaccine in the treatment of rabies.—Other papers include one on the pharmacological action of opium and narcotine in malaria by R. N. Chopra and R. Knowles, and one on the action of opium in diabetes by R. N. Chopra and J. P. Bose.—N. D. Kehar records the behaviour of cinchona alkaloids towards living cells.—The distribution of lathyrism in the United Provinces is dealt with by H. Scott, as well as feeding experiments on tonga ponies with botanically pure cultures of *Lathyrus sativus* and *Vicia sativa*.

THE LANCET.

LONDON: SATURDAY, DECEMBER 20, 1930.

THE EXPERIMENTAL INVESTIGATION OF CANCER.

THE ninth scientific report[1] of the Imperial Cancer Research Fund which has just been published contains 12 original contributions and four reprints. The fact that these papers have been collected in this form is an indication that special importance is attached to them. They certainly represent noteworthy contributions to the literature of cancer. For the first time papers dealing with the filtrable tumours of the fowl are included in this series of scientific reports, the attitude adopted by cancer researchers towards this type of malignant new growth having changed in recent years. The fact that these tumours can be transmitted by cell-free material, while the transmission of mammalian tumours has never been accomplished by material free from living cells, led many investigators to doubt the true neoplastic nature of the filtrable fowl tumours. Others regarded them as atypical manifestations of malignancy, the investigation of which had little bearing on the real problems of cancer. The work of GYE was the first attempt to formulate a conception in which the development of malignancy in the filtrable fowl tumours presented merely an exaggeration of the process underlying the development of malignancy in mammals. Although the experimental evidence which he brought forward in support of his views has not been accepted, his work has had the effect of establishing the fowl tumours as true malignant new growths. The fact that filtrable tumours exhibit greater variations among themselves than was at one time realised is becoming clear. In this report Dr. J. A. MURRAY, the director of the Fund, and Dr. A. M. BEGG give accounts of two types hitherto undescribed, an endothelioma and a fibrosarcoma. It is known that filtrable tumours of the fowl are transmitted by cell-free filtrates or by dried material, and there is a rapid transformation of the normal cells of the injected fowl into malignant cells—that is to say, in the injected fowl the tumour arises de novo. A detailed study of the early stages in the development of the endothelioma showed that the endothelial cells of the capillaries at the site of the injection undergo a transformation into malignant cells. This process is illustrated by numerous drawings and microphotographs, so that the actual sequence of events can be visualised. The fibrosarcoma described is also of interest, because this neoplasm seemed to undergo a change in its biological properties in the course of its propagation. It is an exceptionally slowly growing tumour, which was at first so hard that it could not be minced for the purpose of making an extract. After several transplantations by living cells it became softer and more cellular; when an extract was made and injected the same type of tumour was produced.

The view is gradually gaining ground that the key to the cancer problem may be found in the investigation of these tumours and of the difference in their biological behaviour from that of mammalian tumours. Dr. W. CRAMER contributes two papers on this question. He points out that all the filtrable fowl tumours hitherto studied are of mesoblastic origin, and that when their transmission is effected by the injection of cell-free material a connective tissue reaction is involved. A similar transmission of an epithelial tumour to be successful obviously demands more restricted conditions. Thus a carcinoma of the ovary could only be transmitted without the intervention of living cells, if the cell-free material was actually injected into the ovary. Since most attempts to transmit mammalian tumours with cell-free material have been carried out with *subcutaneous* injections of extracts of *epithelial* tumours the negative results obtained are not conclusive evidence against the existence of an agent. Only experiments with sarcomata could yield such evidence. Extracts of mouse and rat sarcomata have given negative results, but Dr. CRAMER points out that even the Rous tumours pass through a phase when they cannot be transmitted by extracts, indicating a temporary attenuation of the agent or virus, which is further emphasised by the unavoidable loss resulting from extraction and filtration. In order to exclude this possible fallacy, Dr. CRAMER has studied the transmission of transplantable mouse and rat tumours, the cells of which had been killed by a process of repeated freezing and thawing. He found that all carcinomata treated in this way gave uniformly negative results on inoculation, as was to be expected, while the inoculation of frozen and thawed sarcomata yielded a considerable number of new tumours. The possibility that these positive results may have been due to the survival of a few exceptionally resistant cells is discussed. Experiments with tissue cultures gave no evidence of the survival of cells after repeated freezing and thawing. Moreover, the transmissibility of frozen and thawed sarcoma material is more readily attenuated by incubation or even by washing with saline than would be expected if it depended on living cells. Although this possibility cannot be excluded, the experiments show that the dogma of the non-transmissibility of mammalian neoplasms without the intervention of living cells does not rest on as secure a basis as has hitherto been generally believed.

Another aspect of the ætiology of cancer is dealt with by Mr. H. G. CRABTREE, who has studied the carbohydrate metabolism of tumours by Warburg's manometric method. He finds that different tumours exhibit wide variations in their

[1] Ninth Scientific Report of the Imperial Cancer Research Fund. 39 plates. 1930. London: Taylor and Francis. 21s.

carbohydrate metabolism. One feature, however, is common to all—namely, the power to split glucose into lactic acid even when oxygen is present. The significance of this property will be understood if it is realised that this reaction does not require the intervention of oxygen and is exhibited by normal tissues only under anaerobic conditions, and then only to a limited extent. This property of aerobic glycolysis is not specific for malignant cells, as was at one time suggested by WARBURG, but is possessed by other pathological overgrowths, such as the cellular proliferations induced by viruses. Future observations on such non-malignant pathological overgrowths will have to be carried out before generalisations on the carbohydrate metabolism of malignant cells can be made. The theory which attributes malignant changes to an alteration in the nuclear constitution of the cell is dealt with by Dr. R. J. LUDFORD. This view was held by BOVERI, who developed this idea in a small pamphlet first issued in 1914 and republished after his death in an English translation in 1929 under the title "The Origin of Tumours." BOVERI's view was that the cancer cell owed its peculiar properties to a defect in the chromosome constitution. Recent research has, indeed, shown that the cells of malignant new growths frequently show abnormal mitoses, including mitoses with an abnormal number of chromosomes, and Dr. LUDFORD supplies a number of striking examples of such abnormalities. But it is by no means clear whether these are the cause or the effect of the malignant proliferation. A further development of BOVERI's view has been the suggestion, first made by BAUER in 1928, that an alteration in the genes rather than the chromosomes was responsible for the malignant change—that the cancer cell was in fact a mutation of the normal cell. In a most interesting article Dr. LUDFORD gives a full bibliography of the literature and reviews the whole subject, pointing out that perhaps the strongest objection to this view is the difficulty of explaining the filtrable tumours of the fowl on such a basis. In another contribution, beautifully illustrated, Dr. LUDFORD shows how a careful study of transplanted tumours, spontaneous tumours, and tar tumours has led him to the conclusion that, contrary to the view of ITCHIKAWA and of OERTEL, "malignant growths are devoid of any specific nervous organisation." The report contains also a number of papers by Dr. L. FOULDS, who describes a rare type of tumour in the mouse—an angio-endothelioma—and deals with certain aspects of the problem of immunity to transplanted tumours, which have a bearing on the attempts recently made to apply this phenomenon of immunity to the therapy of cancer. Dr. MURRAY and Dr. CRAMER each contribute a paper on the experimental carcinogenesis by tar.

This ninth scientific report is a production worthy of its predecessors, and gives fresh evidence of the wide interests and unprejudiced attitude of the workers of the Imperial Cancer Research Fund.

A FURTHER TEST OF THE SPAHLINGER VACCINE.

Sir FREDERICK MAURICE has sent us copies of documents communicated to representatives of the daily press at the Ritz Hotel, London, on Dec. 9th. A committee of which he is a member has been controlling a test for the immunisation of cattle against tuberculosis, and feels that the moment has arrived when the results of this test should be made known to the world. The medical signatories to the manifesto include Dr. T. DRUMMOND SHIELS, Under-Secretary for the Colonies, Sir BRUCE BRUCE PORTER, Sir THOMAS WATTS, and Dr. J. H. WILLIAMS, M.P. Their report begins with a recital of experimental work carried out at the laboratories and farm of Mr. HENRY SPAHLINGER at Carouge, near Geneva, of which a preliminary account was given on pp. 107–8 of "A Book of Facts," by Mr. R. G. LOVELL (1926). Then comes the protocol of a further test made in this country. Last December, we are told, 18 calves of various breeds at a Norfolk farm were vaccinated with a single dose of a simplified bovine vaccine provided by Mr. HENRY SPAHLINGER, and said to be prepared from dead germs although not more nearly described. The injections varied in quantity from a mere trace to large doses. In July, that is six months later, all the vaccinated calves were injected with massive doses of living bovine tubercle bacilli, and all except one of the calves were alive and in good health on Nov. 23rd, that is, 19 weeks later. The calf which died on Nov. 7th had received the smallest dose of vaccine, no more than 0·05 c.cm. Four other calves injected in July with the same massive doses of living bovine tubercle bacilli, but not previously vaccinated, all died within eight weeks, the cause of death in each case being certified as tuberculosis by independent bacteriologists to whom organs were sent. These facts are regarded by the committee of control, which included two veterinary surgeons, as proof that the Spahlinger simplified bovine vaccine confers on calves an extremely strong resistance against tuberculosis, even when the virus is administered intravenously in such massive doses as to kill unvaccinated calves in about a month. The AGA KHAN, however, in an address to the press representatives, went much further than this, and stated that the vaccine solved the problem of ensuring a world supply of tubercle-free milk and meat.

The claim to have immunised cattle against experimental infection is not new. EMIL V. BEHRING made such a claim in 1902 for his bovo-vaccine, and the same claim has since been made for B C G. Both raised great hopes which have not yet been realised outside the laboratory, if we are to take the evidence of those who have tried them on the farmstead. Speaking at the recent International Veterinary Congress held in London Dr. E. A. WATSON, chief pathologist to the Animal Diseases Research Institute at Quebec, said that a comparative study in Canada over 5–6 years did not substantiate claims for B C G vaccination

as an efficient means of protection against bovine tuberculosis. His colleagues in the United States, he believed, felt the same. At the same congress came a warning from Prof. ALB. ASCOLI, of Milan, that a large number of post-mortem findings of old animals were necessary before results of inoculation from birth onwards could be ascertained. And Dr. GUÉRIN himself said it was a mistake to think that active vaccination against tuberculosis was sufficient of itself to ensure protection against the disease. It must be combined with rigid isolation immediately after birth. The congress indeed made it clear that no one has yet succeeded by vaccination in establishing permanent immunity to accidental infection from tuberculous cattle in the same shed. He who can do this will deserve well of mankind. It is true that in the recent Norfolk test with the Spahlinger vaccine the calves were housed and kept under ordinary farming conditions, and were fed on milk from cows who reacted to tuberculosis, in order to reproduce the unfavourable conditions met with in practical farming. But the test is incomplete and will remain incomplete until the life-history of the vaccinated calves is fully known.

It is in fact too early for any deduction that by systematic vaccination of this kind bovine tuberculosis can be wiped out without slaughtering diseased cattle. The group for whom Sir FREDERICK MAURICE and the AGA KHAN speak does not contain immunologists or bacteriologists whose opinion on such a vital problem would be required before the scientific world is satisfied. The Medical Research Council, or indeed any other expert body, would no doubt be willing to submit Mr. SPAHLINGER'S vaccine to a searching test. There is prima facie ground for doing so. If the vaccine were to be placed on the open market it would be possible for others to repeat and confirm the Norfolk test. But if the test is now used as the basis for an appeal to provide funds, the truth may be hard to come at.

THE TERCENTENARY OF QUININE.

IT has been said that the discovery of quinine established colonies and changed the face of history. The tercentenary of this great event has been fitly celebrated during the past two weeks by a special exhibition and series of receptions at the Wellcome Historical Medical Museum. The exhibits include specimens culled from many sources and many periods; photographs, paintings, engravings, manuscripts, and books—everything, in fact, that could conceivably interest or instruct the seeker after knowledge concerning malaria or quinine. Among the most striking were three of the original serons of cinchona bark brought from Peru by RUIZ and PAVON to CARLOS III, in 1777; these, together with specimens of Loxa and Calisaya bark, had been presented by the KING of SPAIN, and showed the old mule boxes in their original rawhide coverings, just as they came down the mountains of Peru 250 years ago. The receptions were made an occasion for illustrating the cosmopolitan circle which quinine unites in its interest. A dozen nations sent representatives to do it honour; one nation discovered it, another published its secret, a third popularised it, a fourth grows it, a fifth purchases it.

Quinine is a world's possession and must be grown by the nation which happens to possess both soil and climate suited to its whims, for it is no hardy universal, as Sir DAVID PRAIN pointed out, but a real problem to the cultivator. By what he described as an "accidental preference" the alkaloid quinine became officinal and remained the only one so honoured. Being therefore the one most frequently prescribed, it is the one most in demand, and the planter must plant accordingly, for the manufacturer pays for his cinchona bark in terms of its quinine content. Java has no cinchona monopoly, but its soil and climate have given it a quinine monopoly because the yellow bark, which happens to be richer in this alkaloid than any other, will only flourish in Java and Bolivia. While quinine remains the alkaloid of official and popular choice it is unlikely that the others will be produced on a large enough scale to show whether they are equally effective in preventing and controlling malaria; but it is a point which should be determined, for other kinds of bark yield other alkaloids more richly and at the same time adapt themselves better to other climatic conditions. In any sample of "crown" bark, whatever its total alkaloid content, some three-fifths to three-quarters will probably be quinine; in "red" bark not more than one-quarter will be quinine; while in a good "yellow" bark four-fifths will be the officinal alkaloid, and in "grey" bark there will be but traces of it. Mr. A. R. MELHUISH deplored the small proportion of the world's cinchona that comes from within the British Empire; the answer lies not with increased enterprise on the part of the cultivator, who is helpless so long as quinine is demanded, but with the medical profession, who can tell him whether or not it is any use cultivating a kind of bark poor in that particular alkaloid which has hitherto held the world's market.

MERSEYSIDE HOSPITALS BUDGET.—The voluntary hospitals represented on the Merseyside Hospitals Council have just prepared their budgets for next year. The estimated total ordinary income, apart from legacies and unforeseen gifts, is £189,467, and the estimated ordinary expenditure £339,875. Towards the deficit of £150,408 the Merseyside Hospitals Council will be able to allocate £103,500 from the penny-in-the-pound scheme, leaving nearly £47,000 to be provided by new money, the source of which is at present not obvious. Meanwhile, the Royal Southern Hospital has been obliged to sell all its available securities, amounting to £13,000, to reduce its debt of nearly £41,000. Several hospitals are contemplating special expenditure not included in the budget figures. The most important of these estimates are: Royal Southern Hospital, £17,000 on new X ray department and extension of operating theatre; David Lewis Northern Hospital, £25,000 on new out-patients' department, &c.; Liverpool Radium Institute, £20,000 for completion of new building; St. Paul's Eye Hospital, £25,000 for new out-patients' department; Birkenhead General Hospital, £12,000 on nurses' home extension and X ray department extension; Samaritan Hospital and Hospital for Women, £24,000 towards the building of the new hospital.

ANNOTATIONS

BIOLOGICAL EFFECTS OF X RAYS.

IN a noteworthy contribution Prof. Sidney Russ and his co-workers record the results of experiments, carried out at the Middlesex Hospital[1] over a period of three years upon the cat and the rabbit. X rays of two different groups of wave-length were used corresponding to voltages of 150,000 and 230,000 respectively. The minimum dose of radiation necessary to produce the death of the animal was determined for each type of radiation, the whole animal being exposed. It was found that the minimum lethal dose of the more penetrating radiation was less than that of the other type in the ratio of 1 to 2·8. The tissue changes produced were most marked in small intestine, stomach, liver, spleen, respiratory tract, and white blood cells, although destructive changes could be produced in any tissue by the administration of sufficiently large doses of radiation. In the small intestine there was widespread destruction of epithelium with petechial and even larger hæmorrhages; infection occurring at a later stage appeared to be secondary to the destructive effects. Similar changes were found in the stomach. The large intestine was more resistant. In the liver, congestion and fatty infiltration were produced, with patches of necrosis. In the lungs changes were found in the epithelium of the trachea and larger bronchi, with patchy areas of hæmorrhagic and œdematous infiltration of the alveoli; at later stages endothelial proliferation was observed in the alveolar walls and areas of fibrosis. When, however, the lungs alone were irradiated they were found to be resistant to radiation, the changes described being due in the authors' view to the occurrence of infection. In the blood the effects were marked diminution in the lymphocyte content, followed later by diminution of the polymorphonuclear cells; indeed, in some of the experiments the leucocytes almost disappeared from the blood for a time. Little or no effect was observed on the platelets.

In some of the experiments localised regions only were exposed, and it was found that the typical changes in the abdominal organs were only produced when these were directly irradiated. Bacteria were frequently found in the blood at a late stage. In the authors' opinion infection plays an important rôle in the production of tissue changes, entering the blood stream, it is believed, through the damaged intestinal wall. They refer to work of Cramer, Drew, and Mottram, in which the entrance of bacteria into the circulation was ascribed to thrombopenia produced by the rays—an effect not observed in the present experiments. But Cramer and his colleagues later inclined to the view that the thrombopenia was secondary, and that infection arose from the damaging effect upon the tissues. After large doses of radiation a state of cachexia was produced in the animals somewhat resembling the clinical condition known as "X ray sickness." In view of the fact that histamine or a similar substance is known to be liberated by tissues damaged by X rays, experiments were undertaken to determine if the absorption of such a substance might be responsible for the production of this condition. It was found that the effects of histamine injections did not bear any great similarity to X ray cachexia. An interesting feature of the research from the clinical point of view was the investigation of the effects of liver feeding on the development of the X ray anæmia. Little or no influence upon the anæmia was detected, but in the animals to which liver had been administered there was an apparent increase in the sensitivity of the liver itself to the radiations. In all these animals more extensive destructive changes were observed in the liver as a result of the irradiation than in non-liver-fed animals with similar doses. This observation should lead to caution in the administration of liver extract in the hope of benefiting the anæmia produced by clinical irradiation.

The authors point out that inferences drawn from the results of experiments on lower animals may or may not be applicable to the human subject, and it is to be noted that the doses of radiation which they employed were relatively much greater than those applied in clinical work. Certain of the results however, have their clinical implications. Most important, perhaps, is the occurrence of septicæmia after irradiation of the abdomen, more particularly in view of the fact that mild intestinal lesions are not infrequently produced clinically in the treatment of malignant disease in the abdomen with heavy doses of radiation. Moreover, the fibrosis of the lungs which they describe agrees with the well-known clinical observations of Finzi and of Wintz; if, as the authors believe, this condition is due to infection attempts might be made to combat it on appropriate lines. Another observation which may prove to be of possible clinical importance is the fact that recovery may appear in the leucocyte count after almost complete disappearance of leucocytes from the blood. Nothing is known at present clinically as to the point at which an X ray leucopenia becomes dangerous. Finally, the authors suggest that further study might be undertaken of the effects of different diets during X ray treatment in relation to the occurrence of X ray sickness. Certain differences in the general effects between the cat and the rabbit might be due to the widely differing diets of these animals.

[1] The Physiological and Cytological Effects of Penetrating X Rays upon the Cat and the Rabbit. By S. Russ, Samson Wright, H. A. Bulman, and L. H. Clark. Reprint from Proceedings of the Royal Society of Medicine, Section of Electro-Therapeutics, Oct., 1930, pp. 43–60.

ROAD ACCIDENTS IN DENMARK.

ONE of the measures which is assuredly calculated in the long run to check the rising incidence of road accidents is an international pooling of experience—a comparison of the various means adopted in the different countries to reduce this evil to a minimum. It was, therefore, a most opportune study which Dr. F. Svendsen, of the Danish Red Cross Society, presented in October to the fourteenth International Red Cross Conference held in Brussels. After briefly reviewing the statistics for the United States and showing that the deaths from road accidents in 1929 in this country were nine times more numerous than those in 1911, Dr. Svendsen gave the following statistics for Denmark for the first six months of 1930.

	Motor accidents.	Other road accidents.	Total.
Number	4450 ..	855 ..	5305
Killed	96 ..	15 ..	111
Injured	1903 ..	641 ..	2544
Badly injured ..	977 ..	332 ..	1309

It should be noted that these figures deal only with accidents brought to the attention of the police, and

do not include any of which the police took no cognisance. More than half of all the accidents—i.e. 2727, occurred in Copenhagen, with a population of 708,600. The total population of Denmark is 3,518,000. As great a proportion of the accidents as 83·9 per cent. concerned motor-cars. In 55 per cent. of the traffic accidents, the blame was laid exclusively on the drivers of motor-cars; in 13·7 per cent. bicyclists were held responsible, in 8·5 per cent. pedestrians and passengers; only in 2 per cent. were physical conditions, such as the state of the roads or visibility, held responsible, and in 1·2 per cent. the state of the motor vehicle. In the remainder, the responsibility was shared by a combination of two or more of the above factors. Travellers familiar with the swarms of bicyclists in the streets of Copenhagen will not be surprised to learn that they and pedestrians play a much more important part in the genesis of motor accidents than is the case in other countries. Among the improvements effected of late, the filling in of ditches beside the roads in order to provide bicycling paths deserves special mention. This reform has been made possible by the arrangement which allots part of the revenue from motor-car taxation to the local authorities. There are over 2500 doctors in Denmark—i.e., one for every 1360 inhabitants, and if Copenhagen and its 629 doctors are discounted, the proportion of doctors to inhabitants is as one to 1500. Thanks to the comparative density of the population even in the country, the radius of action of a general hospital (of which there were 170 in 1929) is seldom more than 15 kilometres. Copenhagen is served with 16 and the rest of the country with 139 ambulances, the radius of whose action is about 15 kilometres. For the purpose of comparison it should be noted that the corresponding radius of action in England is about 25 kilometres. The part played by the Danish Red Cross with regard to ambulances consists largely of financing them at the outset; later, they are often taken over and run by the local authorities.

AVERTIN IN OPHTHALMOLOGY.

IN the *British Journal of Ophthalmology* for November Mr. O. Gayer Morgan and Mr. J. M. Lees record their experience of rectal narcosis with avertin, based on more than 50 cases, including cataract extraction, acute glaucoma, excision, evisceration, acute dacryocystitis, removal of the lacrymal sac in chronic dacryocystitis, and minor and major plastic operations on the eyelids. They conclude that it is not a dangerous drug when given with care, and that it well merits a trial in ophthalmic surgery. The amount injected should never exceed 1·0 g. per kg. of body-weight, and the temperature should not be more than 40° C., for otherwise the avertin may decompose and set up colitis; to ensure against this two drops of Congo red solution can be added to 5 c.cm. of avertin, and decomposition will be shown by appearance of a blue colour. If any of the solution, as injected, be returned by the patient it is unsafe to attempt to make up the amount by an extra injection, since absorption is so rapid that it is impossible to estimate how much of the drug has been rejected. In most cases no other anæsthetic, general or local, was used, but Morgan and Lees employed a preliminary injection of morphia gr. ¼ with atropine gr. 1/100, though this is not considered necessary. If the claims of its advocates are confirmed the drug has obvious advantages where a general anæsthetic is contra-indicated or a local anæsthetic is insufficient. In cataract extraction it is chiefly applicable to very nervous patients who cannot be relied upon to keep still during the operation, but when operating with avertin it is necessary to fix the eyeball firmly with forceps during the incision, and this fixture is not so convenient as voluntary depression by the patient himself in obedience to the surgeon's directions. Nevertheless any method of relieving apprehension either before or during an operation on the eye is worth a great deal. The main contra-indications to the use of avertin are a serious degree of nephritis or severe disturbances of the liver. Old age is not itself of importance, and though the authors of this paper have not used the drug on children under 16, there seems to be no reason why they should not do so. Avertin is a narcotic rather than an anæsthetic, and one of its main advantages is that it can be used to remove the patient's anxiety for an hour or so before operation.

THE I.M.S.

IN an ample quarto volume Lieut.-Colonel D. G. Crawford, whose "History of the I.M.S." did very nearly as much for the service as Boswell did for Dr. Johnson, has continued his labours in a volume entitled "The Roll of the Indian Medical Service."[1] The title is, perhaps, unfortunate, since it suggests a book on the lines of the Army List or Bradshaw. In fact Colonel Crawford takes the opportunity, in the introduction, of bringing his history up to date, and apart from the brief individual records of service many notes testify to the enterprise of the author in discovering interesting material in the most unexpected sources. The term I.M.S. has been used in a very broad sense to cover the name of every man who served, even for the shortest period, in the East India Company's land medical services, including the surgeons' mates (assistant surgeons), who were not commissioned officers, but served under warrants issued by the colonels commanding their regiments. Some remarkable histories may be deduced from the laconic entries in this Roll. In the Madras list occurs the name of Mungo Park, the son of the famous African explorer, who had himself been surgeon's mate of an Indiaman. Readers of Lockhart's "Life of Scott" may remember how the father, having obtained by influence the promise of a post in the company's service, provided he could qualify as a surgeon, rushed off to commence his medical studies, and in six months time returned with the required diploma. Other even more striking examples of adaptability are not difficult to find. A sergeant in the St. Helena garrison was given dispensary duties, and having served in that capacity for 15 years was appointed assistant surgeon. Later he went to England, obtained the M.R.C.S., and returned eventually to become full surgeon at St. Helena. As time went on, and medicine rose in the social scale, I.M.S. men not only cured the wives and families of potentates, and shook pagoda trees, but distinguished themselves in many other ways, rendering eminent services in several branches of science, furnishing distinguished administrators and diplomats, and founding commercial houses the names of which are still household words in India. The firm of Jardine and Mathieson was started by one of the company's surgeons, and the well-known publishing house of Thacker and Co., which produces Colonel Crawford's work, is also said to have had a medical origin.

The Roll contains several interesting appendices, notably tables of honours and rewards, and analyses of

[1] Roll of the Indian Medical Service, 1615–1930. Compiled by Lieut.-Col. D. G. Crawford, Bengal Medical Service, ret. London: W. Thacker and Co. 1930. Pp. 711. 28s.

degrees and diplomas and medical schools. As regards academic distinctions, the service has always been well to the fore; a large proportion of officers have held one or more of the higher qualifications, many of them acquired in middle age after special courses of study. A curious feature is the apparent unpopularity not only of the I.M.S., but the R.A.M.C. and Naval Medical Service, with the northern English schools. Some names from these schools are no doubt entered under the other universities or the London medical schools, but there is an almost entire absence of entries under Liverpool, Birmingham, and Leeds degrees in the various lists, and only a moderate representation of Manchester. The Scotch and Irish universities, on the other hand, have always been well represented, as also the London schools, and there are a fair number of men with the London and Cambridge degrees. The inscription on the title-page of this book is somewhat sinister, yet Colonel Crawford had words of modified cheer for the service when he presided at the annual dinner two years ago. He said that though they could no longer hope to obtain diplomatic plums and provincial governorships, many attractive openings remained, and plenty of opportunities for useful work. The old Indian service families still send their sons into mercantile firms in India, if not so many as formerly into the services themselves. It is justifiable to hope that the I.M.S. in a contracted form will take on a new lease of life under the changed conditions which the next few years will see.

HYPOGLYCÆMIA FOLLOWING INSULIN TREATMENT.

THE fear of hypoglycæmia should no longer deter patients from using insulin for diabetes. The symptoms of overdosage can readily be recognised; and there is a simple and satisfactory remedy in the administration of glucose by the mouth, by rectum, or, if necessary, by intravenous injection. Although slight symptoms are common—indeed, some experienced physicians allow their patients to become a little hypoglycæmic in the early stages of treatment so that they may learn the sensations and how to combat them—actual coma from insulin hypoglycæmia is rare. Deaths have, of course, been reported, but in fatal cases there have usually been additional complications, such as extreme inanition, Graves's disease, pancreatitis, acute alcoholism, or gross carelessness. F. Rathery and Sigwald [1] point out, however, that nowadays insulin is widely used in the treatment for conditions other than diabetes and here the risk of hypoglycæmia is certainly greater, since the blood-sugar is not above normal to begin with. They report a fatality following insulin treatment combined with glucose administration, the patient being a young woman under treatment at a sanatorium for Pott's disease of the spine. Because of failure to gain weight, loss of appetite, vomiting, and signs of acidosis, insulin had been given together with intravenous and rectal injections of glucose. When seen by Rathery and Sigwald she was in deep coma, breathing five times per minute though not cyanosed, with tetany of the hands and exaggeration of tendon reflexes. The blood-sugar was reduced to 20 mg. per 100 c.cm. In spite of treatment and raising the blood-sugar to 149 mg. per 100 c.cm. the coma deepened and the patient died. At autopsy there were bilateral pleural adhesions with consolidation at the left base, old tubercle at the right apex, but no signs of meningitis or other alteration sufficient to explain the coma. It was concluded, therefore, that death was due to coma resulting from the administration of insulin, of which 260 units had been given in six days.

[1] Bull. et mém. Soc. méd. hôp. de Paris, Dec. 1st, p. 1702.

WHO WAS WHO.

To the November issue of the *King's College Hospital Gazette* Mr. Willoughby Lyle contributes an article which will be found extremely useful to many readers. It is a summary of the history of the medical school, composed mainly of biographical details of the medical staff up to 1913. During the centenary of its existence the hospital and school have enjoyed the assistance of a remarkably brilliant staff, a large proportion of whom received their preliminary education at the College. The reason why the article is so particularly valuable is that in each case the year of the appointment of these men is clearly stated, as well as the length of their tenure of office, so that it is easy to see which of them functioned simultaneously at King's, and who were their analogues at other medical centres. The biographical notes are supplemented by interesting details in the domestic history of the College. We are thus introduced to such an episode as the discovery of Carlo Ferrari, the murdered Italian boy, in the prosector's room, while characteristic sayings of such well-known heroes of the past as George Johnson, Richard Partridge, William Fergusson, and John Curnow are recalled to memory. A certain number of the staff of THE LANCET of 40 years ago will remember their brilliant and erratic colleague, Curnow, whose success as student, demonstrator, and teacher, was so entirely out of proportion with any position to which he ever attained as practitioner. It would be extremely useful for the purposes of many medical writers if the editors of all the hospital gazettes would publish a similar article concerning their own great men, for over and over again in medical writing—in text-books as well as in essays and journalistic work—it may be necessary, for the clinching of an argument or the provision of an illustration, to allude to some particular work or occurrence associated with a name, when dates and the identifications of institutions and contemporary workers become significant.

PATHOLOGY OF CARDIOVASCULAR SYPHILIS.

IN 1914 A. S. Warthin reported a very high incidence of syphilis in post-mortem material; he stated that the characteristic lesion of syphilitic infection of the heart is a localised interstitial myocarditis, and claimed to have demonstrated spirochætes in these lesions. In the Lumleian lectures this year Carey Coombs [1] said that he has been unable to confirm these findings. As he sees it, cardiovascular syphilis is essentially a lesion of the root of the aorta, the heart being affected in two ways as a result of this aortitis. First, the aortic valves become incompetent with the development of aortic regurgitation, and secondly, and by far the more important, the mouths of the coronary arteries become choked by the swelling of the aorta, thus cutting off the blood-supply of the heart. Coombs finds the rest of the coronary tree, beyond the origin, to be normal except for a slight degree of associated arterio-sclerosis. In the myocardium itself he found no significant morbid lesion except hypertrophy, and this depends for its occurrence on the existence

[1] Coombs, C. F.: THE LANCET, August 2nd, 9th, and 16th, 1930.

of aortic incompetence. A symposium on cardiac syphilis in the October number of the *American Heart Journal* suggests that the majority of American workers agree with these findings and have failed to confirm Warthin's statements. Martland [2] suggests that the mediastinal glands filter the spirochætes from the circulation and act as reservoirs in which the organisms lie latent for many years. Further, he believes the earliest stage in the involvement of the aorta to be an invasion of the adventitia by spirochætes carried along the perivascular spaces around the vasa vasorum by retrograde flow from the mediastinal glands. He explains the low incidence of congenital syphilis of the heart and aorta by saying that in the fœtus the circulation in the lungs is so small that comparatively few spirochætes traverse the lungs and thus few are filtered off and stored in the mediastinal glands; therefore in congenital syphilis the aorta—which in acquired syphilis is infected from these glands—escapes.

FOCAL SEPSIS AND EYE DISEASE.

AT a meeting of the Medical Society of London, held on Dec. 8th, a discussion took place on the relation between certain diseases of the eye and inflammatory foci in other parts of the body. Mr. A. F. MacCallan grouped such diseases under three headings: (1) those which can be cured by the removal of the source of infection, including increase of lacrymation, recurrent tarsal cysts, phlyctenular conjunctivitis and keratitis, and some cases of iritis in which the focus of infection is oral or tonsillar; (2) those which can be alleviated, including other cases of iritis, irido-cyclitis and choroiditis, and also progressive myopia, an important disease, most cases of which, he maintains, have an intimate connexion with sepsis; (3) those not necessarily caused by, but associated with sepsis, a division in which he includes incipient cataract, peripheral striæ in the lens being regarded as an indication for a thorough investigation into the condition of the teeth and tonsils; glaucoma simplex, many cases of which can, he believes, be cured by non-operative measures, once the source of infection is removed; and lastly certain cases of detached retina, due to exudation from the choroid into the subretinal space, and in which no holes exist unless they are allowed to go on without removal of the focus of infection. Over and above these cases Mr. MacCallan maintains that certain cases of vitreous opacities or vitreous "dust," in which the visual acuity is not necessarily affected, can be cured by the removal of septic foci. Apart from the teeth and the tonsils such foci should be looked for in the nasal sinuses, the intestinal canal, or the prostate. Emphasis was laid on the importance of careful investigation into all these possible sources of infection before the performance of any major operation on the eye. Mr. Ernest Clarke added to the list of ocular diseases associated with sepsis several cases of retinal hæmorrhages—generally small hæmorrhages into the nerve-fibre layer—due to septic infection, and he showed several striking pictures of retinal conditions before and after appropriate treatment. Sir William Willcox added to the list of eye diseases which may be caused by sepsis by including thrombosis of the central artery of the retina and retro-ocular neuritis. Dr. Moreland McCrea, who has described [3] appearances somewhat similar to those mentioned by Mr. Clarke, under the title "retinal petechiasis," raised the question how long after the removal of a septic focus in the body is it safe to undertake a major operation. He was inclined to allow a period of six months, but Sir W. Willcox was sure that an interval of three weeks was sufficient. The question must in practice be decided in relation to the extent of the sepsis on the one hand and the urgency of the operation on the other. Although there were dissentients, the consensus of opinion at the meeting was to emphasise the importance of focal sepsis in a variety of eye diseases.

[2] Martland, H. S.: Amer. Heart Jour., Oct., 1930, p. 1.
[3] THE LANCET, 1927, i., 1285.

ANTENATAL SUPERVISION.

As a result of their investigation into two thousand deaths of women in childbirth, a Departmental Committee noted [1] the absence of antenatal care in 17 per cent. On this and other similar experience the Ministry of Health bases a belief that one of the essential measures for securing a reduction in maternal mortality is a general and sustained effort to enlighten the women of the country on the importance of antenatal supervision. Circular 1167, issued to maternity and child welfare authorities, mentions the decision of the Government to undertake the necessary negotiations with the authorities concerned, with a view to formulating a scheme on a national basis for the care of maternity. The additional expenditure, it is remarked, will be small in comparison with the advantages to be gained, and the development is one of the extensions in consideration of which an additional amount of £5,000,000 was included in the exchequer contribution under the Local Government Act for the next three years. Many local authorities have already provided facilities for antenatal supervision, but (Memo. 156/M.C.W.) it is not sufficient to organise clinics without associating the doctors and midwives practising in the area much more directly than has yet been done with the centre and its staff. The antenatal centre suffers from the disadvantage that the doctor in charge seldom if ever actually delivers the patient or is called in by the midwife in an emergency. For this reason closer coöperation between the centre and the doctors practising in the area which it serves is clearly desirable. In the case of women who engage a doctor for the confinement, the necessary antenatal supervision will be undertaken by him, and in the case of women who are insured persons the insurance practitioner is responsible for medical attendance during pregnancy. For these women the antenatal centre should be available for any additional care considered necessary. But there are uninsured women who engage midwives for the confinement and are not in a position to pay a doctor's fee for antenatal supervision. For these also provision is recommended through the maternity and child welfare service, and at a clinic, if accessible and the patient is willing to attend. But in sparsely populated areas it is impracticable to provide centres within a reasonable distance of the women's homes, and in towns there are many women who cannot be persuaded to attend the centres. Some county councils are already making arrangements with private medical practitioners to undertake routine antenatal examination of uninsured women who have engaged midwives for the confinement, and the Ministry looks to an extension of this arrangement also in urban areas. It is suggested that the local authority should prepare a list of doctors practising in the area who are willing to undertake this service. For the staffing of the antenatal centres it is regarded

[1] See THE LANCET, August 9th, p. 321, and August 16th, p. 367.

as preferable to secure the part-time services of private practitioners who possess the special qualifications prescribed by the regulations. Where it is possible facilities should also be provided by other doctors to see their patients at the centre if they so desire. Arrangements on these lines should prove to be one of the most helpful ways of teaching women to accept antenatal supervision as part of the normal preparation for confinement.

THE PROHIBITION OF VIVISECTION.

ON Tuesday last Commander Kenworthy asked leave to introduce a Bill into the House of Commons "to prohibit the expenditure of public money on vivisection experiments." The B.M.A. had issued a circular letter to the Members setting out the usual, and unanswerable, warnings against the dangers of such a measure. The letter explained that the word vivisection implies in the popular mind serious operations which, while they are only permitted by an Act of Parliament to be performed under efficient anæsthesia, form but a fraction of the experiments done for the routine purposes of general health, or for assisting in the medical treatment of individuals and of the community. The potency of many remedies in use to-day, notably glandular extracts, vaccines, sera, and some drugs, such as arsenicals (e.g., salvarsan) cannot be determined except by animal experiments; without being so tested they may be uselessly weak or dangerously strong. Lives depend upon these powerful medicaments being of standard strength, while the amount of diminution of pain and simplification of treatment that may result from the right employment of such a drug as pituitary extract is an unanswerable argument for the use of the products of animal research. Against the value of this drug we must balance the danger of an overdose, but by proper control the standard of potency, expressed in definite units, has been secured. The Medical Research Council is responsible for this standard, and the letter points out that the effective control of therapeutic substances can only be ensured by the State—that is to say, by the expenditure of public funds. Assuredly persons, who are really and widely humane, can only desire to arrest physiological research from a misunderstanding of what that term implies. Leave to introduce the Bill was refused by a small majority.

POST-GRADUATE COURSE IN PSYCHOLOGICAL MEDICINE.

AT the Tavistock Clinic on Dec. 17th the concluding lectures were delivered of an introductory course on psychological medicine for the general practitioner. Dr. H. Crichton-Miller, whose 12 lectures dealt with type psychology, explained, as a preliminary, that the course had come into being because the clinic was in great financial need, and that the proceeds of his lectures and those of Dr. E. Graham Howe were to be devoted to its support. The gain to the clinic will not have been only a material one. An audience of nearly 100 assembled every week at Friends House, since the class was too large to be accommodated in the house at Tavistock-square. Both courses were admirably framed, and their arrangement must have involved careful planning. The audience here, as in most groups of medical men and women who wish to be brought up to date in any subject, included doctors whose qualifications were taken very early as well as very late in the first quarter of this century. The problem of presenting psychological medicine to a class of such varied experience and training differs from that of presenting, say, biochemistry to a corresponding group. In both subjects the stage has often been shifted during the last 25 years and the old backgrounds have been replaced. The risk in designing courses on biochemistry is that a recapitulation of the changes in outlook may bore those to whom they are familiar, while the more senior devotees of litmus paper will remain for ever unconvinced of the importance of the hydrogen-ion concentration or of other conceptions now held to be fundamental. The risk involved in the presentation of modern views on psychology and psychopathology is more serious. It is that the course will be full enough to arouse but not full enough to allay that resistance which is the natural reaction to new ideas when these threaten the accepted canons of good taste. Here a gradual progress led to the smooth acceptance of unfamiliar dogma. The appreciation of the class was manifest in their punctual attendance not only at the lectures but at evening seminars held at the clinic, where questions could be freely asked and difficulties explained. If similar classes could be organised in different centres throughout the country, they should be assured of equal success.

THE SUPPLY OF HELIUM.

AT the time of the disaster to airship R101 we were informed that legislation was to be introduced in the United States to permit the exportation of helium for the use of foreign aircraft. Section 4 of the Act of 1927 prohibiting this exportation has now become inoperative, as Mr. H. B. Milner points out in an informing note on the Denationalisation of Helium in *Nature* for Dec. 13th. Mr. Milner sets out the astonishing progress made in obtaining helium in a pure condition at a moderate cost. In April, 1928, the U.S. Government began to develop the production of helium-bearing gas at Amarillo in Texas, and in August a new well at Soncy, six miles from Amarillo, was found to provide a flow of 7,000,000 cubic feet per day of a gas containing 1¾ per cent. by volume of helium. In May, 1929, the first tank car containing 200,000 cubic feet of helium was despatched to Virginia for use in U.S. army dirigibles. In September, 1929, the Texas well provided more than 850,000 cubic feet of helium of 97·7 per cent. purity, and the output for the year ended June 30th, 1930, amounted to 9,800,000 cubic feet. The price per 1000 cubic feet of helium came down from 17·63 dollars in September, 1929, to 9·64 dollars in January, 1930. An official American communication states that under present conditions it costs less to operate airships with non-inflammable helium than it would cost to operate them with flammable hydrogen. It seems then that we are within sight of the possibility of replacing hydrogen by helium in our own airship construction.

THE President and Mrs. Watts Eden will receive the guests at a reception to be held by the Royal Society of Medicine, at 1 Wimpole-street, London, from 8.30 P.M. on Jan. 21st, 1931. Dr. Arnold Chaplin will give an address entitled Great Figures in History or Misconceptions Removed.

THE Royal College of Physicians of London will be closed from Wednesday, Dec. 24th, until Wednesday, the 31st, both days inclusive.

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXIX.

BACTERIOLOGICAL EXAMINATION OF WATER.

PART II.*

Fallacies of Occasional Examination.

BACTERIOLOGISTS are frequently asked to examine an isolated sample of water and to give an opinion on its suitability for drinking purposes. This sample may have been collected by someone having no real knowledge of water examination. These reports are given, I think frequently, but in my opinion they are usually of very little value. Standards of bacterial purity have been laid down by individuals and even by committees of bacteriologists, but the experienced water bacteriologist realises that these standards have to be used with a great deal of care, and we all agree that before attempting to give an interpretation of the results of a bacteriological examination of water it is essential to have particulars of the methods of collection, the time at which it was collected, &c. Wherever possible the bacteriologist should be given information of the gathering ground so that he is acquainted with the possible sources of pollution. To take only one example: an open reservoir near the sea-side may become contaminated by excreta from sea birds, and, if this factor is not recognised, or not known, by the bacteriologist his report may be of no practical value. He may condemn a water-supply which from a health point of view may be an excellent one.

The methods of examination are, on the whole, satisfactory, but they are necessarily purely arbitrary, and do not pay sufficient attention to the chance variation of samples. The whole aim of the examination is to find evidence of excretal pollution. With our present methods we are rarely able to isolate from the water disease-producing bacteria, such as *B. typhosus*, &c., and, therefore, we content ourselves with finding the number of living bacteria, and particularly those of intestinal origin. As I have already emphasised, the greater the number of living bacteria the greater is the amount of decomposing organic matter, and the more intestinal bacteria found the greater is the chance of there being amongst them disease-producing ones. This is only a probability and, after all, the evidence is circumstantial, and a verdict which condemns the water cannot fairly be given unless the bacteriologist has a good knowledge of his supply and has carried out several examinations.

Some Working Standards.

Household water.—In a household water-supply there is the possibility of contamination from dirty taps, &c., and, therefore, in collecting a sample, the orifice of the tap should be burned with a spirit lamp or flame of some kind, and the water allowed to run freely for at least five minutes, before the sterile vessel into which it is to be collected is filled. Again, leather washers may be a source of pollution, and the bacteriologist must be fully alive to all such sources of contamination. The best sterile receptacle is a bottle of 4 or 6 oz., boiled for five or ten minutes. This should be filled and stoppered with a cork that has also been boiled. The sample should be sent to the laboratory as soon as possible after collection. If the water is satisfactory, that is to say, if it contains no *B. coli* in 60 to 80 c.cm., the need for a second examination is hardly necessary, but if the water contains *B. coli* in 10, 20, or even 40 c.cm., then it should be regarded with suspicion; but it should not be condemned until at least two other samples confirm the finding. The organisms are not uniformly suspended in water, and it may chance that in a single sample a number of bacteria in a small piece of organic matter may have got into the specimen, and a sample taken immediately afterwards may be free.

Deep well, or spring water.—In dealing with deep well water or water from springs where there is little chance of pollution, *B. coli* should be absent in 80 to 100 c.cm., and the total bacteria count on gelatin in three days at 20° should not exceed 200 per c.cm. Grown on agar at 37° most of the ordinary water bacteria fail to develop, and therefore the total bacteria on agar should not exceed 10 to 20 per c.cm.

With *upland surface water*, such as is the supply of most large cities, and especially where filtration is effective, the total bacteria count on gelatin in three days at 20° should not exceed 400 (very commonly it is between 50 and 100), on agar at 37° 10 to 30; and the *B. coli* should be absent in 40 to 60 c.cm., in an average of three to four specimens. On one examination alone, *B. coli* in even 10 c.cm. might indicate a satisfactory water-supply.

The presence of streptococci and B. *welchii* are not common, and need not be dealt with in this article.

Conclusion.

As I have already indicated, the real object of a bacteriological examination of water in this country is to ensure a pure supply—that is, one free from the disease-producing intestinal organisms. For many years typhoid fever was the disease we wished specially to guard against. More recently the paratyphoid fevers have taken the place of typhoid. Dysentery, particularly the bacillary form, is much more common within the last few years, and some of the food poisoning organisms—e.g., Gaertner's bacillus—have been found in a water-supply. These food poisoning organisms are not uncommon in the lower animals—mice, birds, &c.—and, consequently, may get into a water-supply.

With this knowledge it seems to me that a regular and a very thorough bacteriological examination of our water-supplies is essential, but the interpretation of the results calls for special care and experience.

J. M. BEATTIE, M.D. Edin., L.R.C.P. Lond.,
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* Part I. appeared last week.

HOSPITAL ACCOMMODATION IN LEEDS.—Last week Lord Moynihan, by invitation, formally presented a cheque from the Leeds Jewish community for the endowment of a bed at the local Herzl-Moser Hospital in the name of Mr. Lyle Goodman, an active worker on behalf of that institution. Speaking upon the need for coördination of hospital services, Lord Moynihan alluded to the fact that while there were at the moment 1319 patients awaiting admission to Leeds General Infirmary, at the St. James's Hospital there were empty beds.

SPECIAL ARTICLES

THE VALUE OF FOODSTUFFS FOR VITAMIN A.

BY E. M. HUME
AND
H. HENDERSON SMITH.

(*From the Department of Experimental Pathology, Lister Institute.*)

THE discovery that purified carotene is a substance which provides a source of vitamin A of constant value when tested biologically on animals has brought the accurate standardisation of food materials for their value in vitamin A appreciably nearer. According to the differing biological techniques used, the minimum daily dose of carotene for a rat, deprived of vitamin A, has been found by some workers to be from 0·005–0·01 mg.[1 2] and by others to be about 0·003 mg.[3] The former required a considerable growth performance from their experimental animals; the latter used as their criterion the maintenance of the depleted animal over a set experimental period. The exact particulars of the latter method are set out in the paper referred to,[3] and we have now used it for some little time. No attempt has been made to apply it methodically to the evaluation of food materials, but a few scattered observations have been obtained which are instructive in several ways. They seem to show that it would be easy to standardise food materials against carotene for their value in vitamin A, and that the minimum dose of some common foodstuffs is considerably smaller than had been supposed.

Much of the earlier work on the evaluation of foodstuffs for vitamin A was very roughly done; the materials to be tested were only fed as percentages in the diet, so that the actual daily minimum dose for an individual was not ascertained, but could be approximately worked out. A certain amount of more accurate evaluation has been done more recently, but the biological technique has always yielded results which were not very easy of interpretation. Dye, Medlock, and Crist,[4] for instance, used 0·2 g. as their smallest daily dose of green lettuce, and obtained maintenance and fair growth with it; but they did not test any smaller doses.

Till recently the minimum daily rat dose of the foodstuffs commonly deemed to be the richer sources of vitamin A were, with the exception of cod-liver oil, thought to be of about the magnitude of 100 or 200 mg. We, ourselves, used daily supplements of 200 mg. of fresh green prickly seeded spinach (*Spinacea oleracea*) or of 100 mg. of New Zealand butter, over long periods, as the sole source of vitamin A for rats, and found them adequate for maintenance and considerable growth,[5] but smaller doses were not tried. Moore [2] recently pointed out that the minimum dose of raw carrot was smaller than had been supposed. He found it to be 100 mg. daily or less. On 100 mg. two rats showed fair growth; the only rat which received 50 mg. died.

Very much smaller values have been obtained by McLaughlin [6 7] who made a considerable examination of New Zealand spinach (*Tetragonia expansa*), investigating the value of leaves of different sizes. She found that, according to the size of the leaf, the dose needed to maintain life and promote some growth varied from 70 to 120 mg. per rat *per week*. Of prickly seeded spinach, 70 mg. weekly were found sufficient. These values are extremely small, but it is not very clear how completely McLaughlin's rats were depleted, and it is not easy to be certain, therefore, how far the dose was a full maintenance dose or not; her comparisons are valid for her own work, but are not certainly truly comparable with those of other workers.

We have made a few tests on fresh prickly seeded spinach, fresh cabbage, and New Zealand butter, from which it is evident that smaller amounts than had been supposed necessary of these foodstuffs also will suffice to maintain life in the rat. The results are very fragmentary, but are set out in the Table, together with the values obtained by the same method with two samples of carotene, one derived from spinach and one from carrots. Reference to the Table shows that two rats were maintained on 20 mg. and 30 mg. daily of fresh spinach respectively. A little growth was made on the 20 mg. dose, showing that even this was probably not quite minimal. The 20 mg. dose was tried because, according to the figures of Arnaud, quoted by Leroy S. Palmer in his book on "Carotinoids," it would represent a carotene

Table showing Growth of Rats on a Diet devoid of Vitamin A, after a Preliminary Depletion Period, on addition of various daily doses of Carotene, Spinach, Green Cabbage, and Butter.

Material.	Daily dose mg.	Litter No. and sex of rat.	Days of maintenance on dosage.	Growth in period of dosage (g.).	Remarks.
Carotene from spinach M.P. 172° C.	0·002	1432. M	28	+10 −27	Died.*
		1440. F	28 +	+ 9 − 9	Failing.†
	0·003	1432. F	24 +	+15	—
		1441. M	28 +	+37	—
		1440. M	28 +	+32	—
		1440. F	10 +	+24	Cured.‡
	0·005	1440. M	28 +	+46	—
Carotene from carrot M.P. 173–174° C.	0·002	1463. M	28 +	+50	—
		1463. F	28	+ 9 −12	Failing.§
	0·003	1453. F	28 +	+26	—
Fresh spinach	20	1272. F	28 +	+15	—
	30	1272. F	28 +	+23	—
Fresh green cabbage	20	1441. M	28 +	+10	—
		,,	28 +	+16	—
		,,	5	− 8	—
	80	,,	28 +	+61	Cured.‖
New Zealand butter	14	1533. F	28	+11 − 2	Failing.¶
		1533. M	28 +	+26	—
	28	1440. M	28 +	+23	—
		1533. M	28 +	+38	—
		1569. F	28 +	+19	—
		1580. F	28 +	+28	—
	56	1463. M	28 +	+60	—

Dosage was maintained for 28 days. The symbol + after the number of days of maintenance signifies that the animal appeared likely to survive longer when dosage was stopped.

Remarks.—*Died at end of experiment. †Failing at end of experiment. ‡Cured after failure on other material. Abbreviated experiment. §Huge calculi in bladder. ‖Cured after 20 mg. dose. ¶Failing at end of experiment. Calculi.

content of about 0·003 mg., a dose which, as already mentioned, is found by this method to be minimal.

With fresh cabbage two rats were maintained on a dose of 20 mg. daily, while a third failed on this dose, but was cured and grew normally on 80 mg. daily. With New Zealand butter one rat made normal growth with a daily dose of 56 mg., four maintained and made some growth on 28 mg., while on 14 mg. one failed and one survived.

If the minimum dose is taken as being the smallest dose upon which all the animals are able to survive, the above results give indications that the minimal daily rat dose of spinach is 20 mg. or less, of cabbage more than 20, but less than 80 mg., of New Zealand butter 28 mg. or less. Reference to the Table shows that the corresponding minimum daily dose of carotene by the same method is 0·003 mg. Too few rats were used in these experiments for the values to be taken as finally conclusive, but they are indicative, and we have found that clear-cut results can usually be obtained with three or four rats for each dose of material, and that doses differing from one another by 50 per cent. or possibly less can be differentiated. McLaughlin [6] was able to differentiate between doses which only differed by about 10 per cent., but the number of animals on each dose was large, usually about a dozen.

It thus appears that the minimum dose for many foodstuffs is considerably less than has been supposed, and that it can be ascertained with considerable accuracy, and without employing large groups of animals, by the biological technique based on maintenance of the rat rather than on growth. It is also suggested that the evaluation of foodstuffs might be standardised against the value of carotene, if a specification were agreed upon as to the properties—for instance, melting-point and colour-index—to be required from the carotene which should function as the standard. If a mapping out of the value of the commoner foodstuffs for vitamin A were carried out it would be an important step towards determining the adequacy or inadequacy of human dietaries in this respect. Attention has been focused lately on the possibility that a partial deficiency of vitamin A is not uncommon, and that a condition of latent deficiency disease results in which the individual is liable to infectious invasion of the mucous membrane, more particularly in the respiratory passages, as well as to other ills.[8] Accurate evaluation of a dietary, with the knowledge at present available, presents insurmountable obstacles, and verdicts as to adequacy or inadequacy of vitamin A are, except in extreme cases, quite conjectural.

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WESTON-SUPER-MARE HOSPITAL: NURSES' HOME. A new nurses' home for the Weston-super-Mare Queen Alexandra Memorial Hospital was opened last week by Dr. G. H. Temple, the senior member of the honorary surgical and medical staff. The home contains 22 bedrooms and has the usual amenities. Application is being made to the General Nursing Council for the recognition of the hospital as a training school.

MEDICINE AND THE LAW.

Partnership Dispute.

SOME remarks on medical partnerships in "The Conduct of Medical Practice" may appropriately be repeated in view of recent litigation. Partnerships, it is observed, sometimes fail because the partners are temperamentally incapable of carrying on together. "When this occurs the partners cannot be too vehemently urged to keep out of the law-court." If they insist on going to law they will probably involve themselves in a distressing and expensive struggle which will injure them and perhaps discredit in the public eye the profession to which they belong. The recent litigation to which we refer was a slander action brought by one partner against another. It was stated by the plaintiff's counsel, in his opening speech, that the parties, who had been in partnership since 1911, had always been antipathetic in character and outlook, and for years there had been friction between them. The plaintiff, for instance, had complained of the way in which, while he was absent on holiday, the defendant had looked after his patients. In February, 1929, it was said, the plaintiff had an acute attack of gastritis as the result of overwork, and the defendant's attitude had been so unsympathetic as to suggest that the defendant thought the plaintiff was shamming. A few months later, when the plaintiff was under treatment by another practitioner, the defendant seems to have formed the opinion that the plaintiff was not ill at all, but was drugging himself with morphia. This suspicion influenced the defendant so strongly that, when the plaintiff was away in France for a holiday in August, he really believed that the plaintiff was not in France at all but was hanging about the neighbourhood so that he might slink into the house and satisfy his craving for drugs. There was no doubt that someone had been taking drugs from the dispensary cupboard. The defendant had marked the bottles and found many ounces of morphine missing between the end of August and the middle of October. But, when at last the defendant taxed the plaintiff with the taking of the drug, the plaintiff (who vigorously denied the allegation) discovered that a nurse who had access to the cupboard was the culprit. This unhappy woman turned out to be a drug addict; she was caught in the dispensary with the morphine bottle in one hand and the measure in the other. It thus became perfectly clear that the defendant's suspicions of the plaintiff had been mistaken. The accusation, however, had not made the parties any better friends and the plaintiff eventually brought an action for slander.

Now, if one partner should honestly believe that another partner is drugging himself improperly, and if the former communicates his suspicion in private to the latter, there is no slander because there has been no publication to a third party. In this particular case the matter had gone further. The regional inspector of the Ministry of Health had paid a routine visit in November, 1929, and to him the defendant had mentioned the disappearance of the drug and his suspicion against the plaintiff. In addition, the defendant had apparently made a similar communication to another practitioner who had acted as locum tenens in the plaintiff's absence in France, and who was negotiating with a view to entering the partnership in the plaintiff's place if the vacancy occurred. There was thus sufficient publication, but two further legal obstacles stood in the

plaintiff's way. It is a peculiarity of the law of slander (i.e., defamation by spoken, not by written, words) that words are ordinarily not actionable unless they were such as to cause appreciable damage for which compensation can be assessed. This alleged slander about the drug-taking was actionable only if it charged the plaintiff with the commission of a crime—e.g., the stealing of the drugs from the cupboard—or if it disparaged the plaintiff in the way of his profession as a medical practitioner; in either of those two cases the words would be actionable in themselves; but otherwise the plaintiff would have to prove that he had suffered special damage. The second obstacle was the defence of privilege. There are times when it is a duty to speak out frankly in disregard of the consequences. If a practitioner honestly thinks his partner is improperly drugging himself, he may be entitled to privilege if he speaks out in pursuance of his duty and to protect the partnership interests; he may also legitimately speak out to the Ministry of Health inspector if it is the inspector's duty to see that the supply of drugs is not misused. This defence of privilege can be destroyed if the defendant can be shown to have spoken out maliciously and to have been actuated by some wicked or indirect motive.

The judge held that all the statements which were made by the defendant were privileged; it was for the jury to say whether there was any malice which rebutted the privilege. These various legal issues are reflected in the four questions which Mr. Justice Horridge left to the special jury. The questions were put in duplicate to the jury in view of the alleged double publication to the locum tenens and the regional inspector. The jury gave the same answers in both cases and answered all four questions in the negative. The first two questions must have been the most difficult; they were (1) were the words spoken of the plaintiff as a doctor, and (2) did they impute to him any unfitness in his profession as a doctor? As already explained, the alleged slander would not be actionable unless the words referred to the plaintiff's conduct as a medical practitioner, and were such as would prejudice him in his profession. One would suppose that a reputation for addiction to drugs would hardly be a good advertisement for a doctor. However, the jury, after direction by the judge, quickly answered the two questions with the word "No." The next question was whether the words imputed a criminal offence. The defendant had been pressed in cross-examination with the suggestion that secretly taking drugs from the partnership supplies meant stealing; but he denied that he had intended any accusation of theft. "Any doctor," he said, "has the right to take any drugs from the partnership dispensary; it is the usual custom." The last question to the jury was whether the defendant was actuated by malice. This question, like the previous questions, having been answered by the jury in the negative, the defence prevailed all along the line. Judgment was accordingly entered for the defendant with costs.

Returning to the general reflections with which we began, we ask what good has this litigation done to the partners concerned? The plaintiff, naturally anxious to make it clear that the accusation of drug addiction was false, may have felt unwilling to forgo his legal remedy. He has lost his action and his costs will not be light. The defendant, who seems not to have expressed regret for his mistake until he was in the witness-box at the trial, has won his action but is shown to have made one singularly unfortunate diagnosis on inadequate grounds. The medical profession as a whole has perhaps not greatly suffered from the publicity which the dispute has obtained; on the other hand, it has no special reason to thank or congratulate the parties. In a situation intolerable through incompatibility of temperament, one simple remedy is a mutual agreement to dissolve the partnership. If in such contingencies the disposal of the goodwill or other partnership assets or the return of the purchase money is a stumbling-block, is there no arbitrator whom the parties can trust to give a reasonable common-sense decision? One of the risks of choosing the law-courts instead of an arbitrator is that litigation of this nature often ends in arbitration after all. Many judges, in such a case as we have described, press a settlement upon the parties rather than allow a regrettable personal squabble to occupy the time of the court. The resultant compromise may or may not satisfy plaintiff and defendant; it means that they submit in the end to the arbitration which they might have accepted in the beginning without the lawyer's bills and the publicity.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified: Surg. Comdrs. J. S. Austin to *President*, for three months' post-graduate course; G. R. McCowen to *Victory*, for Haslar Hospital; and C. F. O. Sankey to *Warspite*.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub.-Lts. T. Colver and J. C. Livingstone to be Surg. Sub-Lts.

ROYAL ARMY MEDICAL CORPS.

Lt. (on prob.) J. Beggs resigns his commn.
Lt. E. S. O'Sullivan relinquishes his temp. commn.

ARMY DENTAL CORPS.

Maj. L. Somerville-Woodiwis relinquishes his commn. on appt. to a permanent commn. in the R.A.F.

TERRITORIAL ARMY.

Lt. L. N. Jackson to be Capt.
W. E. Tucker to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. F. W. Bury, from Active List, to be Capt.

ROYAL AIR FORCE.

Medical Branch.—Proby. Surg. Lt. H.T. Rylance, R.N.V.R., is granted a temporary commission as a Flying Officer.
Dental Branch.—Squadron Leader P. E. Brown (Maj., Army Dental Corps) relinquishes his temporary commission on return to Army duty.

COLONIAL MEDICAL SERVICE.

Appointments as Medical Officers have been made as follows: Dr. W. C. E. Diamond, Malay States; Dr. D. P. Turner, Somaliland; and Dr. J. A. Loewenthal, Uganda.

MILLER GENERAL HOSPITAL.—At the annual meeting last week it was stated that 2200 in-patients were treated in 1929, the largest number on record; there were 192,000 out-patients. The massage, electrical, Swedish remedial, and ultra-violet ray department treated 73,492 patients. Last year's financial difficulties were alleviated by the grant of £12,000 from King Edward's Fund and generous help from others.

DUDLEY GUEST HOSPITAL.—Princess Mary last week opened a new wing which constitutes the first unit of an extension scheme which, including the remodelling of some of the existing wards, will cost £50,000. The new wing, including furnishing, will entail an expenditure of between £20,000 and £25,000, most of which has already been obtained, and will provide 54 additional beds. When the entire scheme is completed the hospital will contain 189 beds.

PUBLIC HEALTH SERVICES

HEALTH OF THE CITY OF LONDON.

Statistics.—Estimated population, 10,700. Birth-rate, 7·4. Death-rate, 14·0. Death-rates per 1000 of the population: tuberculosis, 0·37; cancer, 1·4; respiratory diseases with influenza, 2·5; heart disease, 4·4. Death-rates per 1000 births: infants, 63; young (1–5 years) children, 13; mothers from childbirth, 0.

THE smallness of the figures causes the rates in the City to be liable to yearly fluctuation. Dr. W. M. Willoughby shows that an unusual proportion of the population live under rather special conditions. Thus 910 live in artisan's dwellings erected by the late Commissioners of Sewers and the Corporation. The birth-rate in these dwellings was 7·7 and the death-rate 12·1. The residents used the baths provided for them at the rate of 15 per head per annum. Registered houses let in lodgings provide for 448, with an average of 2·3 persons per tenement. Eleven blocks of self-contained dwellings provide for 1217 persons, with an average of 2·8 persons per tenement.

The attention of the Fishmongers' Company was drawn to a source of winkles suspected of causing a case of enteric fever. Of 48 samples of bread and butter, one informal sample was found to contain 40 per cent. of foreign fat. Of 26 samples of cream, one contained 95 per cent. of fat not derived from milk. In two cases samples of sauce were found to contain copper sulphate, which investigation showed to be due to defective copper pans. In two cases of adulterated milk the retailer requested that samples should be taken in course of delivery to him. The samples had to be taken by an outside authority and were certified to be genuine. Proceedings were successfully instituted against both retailers. Two milk vendors were convicted of bottling milk in the street. One of them, who had been previously cautioned, was fined £40 and the other £5. There was a decrease of 27,000 tons in imported beef as compared with the previous year. Argentina supplied 77 per cent. Mutton and lamb were about the same in amount as last year, and Argentina made good the decreases from New Zealand and Uruguay. The proportion of British diseased meat discovered in the markets rather increases than lessens, and Dr. Willoughby points out that meat inspection in this country cannot be complete until all carcasses and organs are examined at the places of slaughter, and the meat which is passed is officially stamped.

The investigation of tuberculosis in pigs from avian infection has been continued. Dr. Stanley Griffith and Mr. R. L. Cornell, M.R.C.V.S., have typed the tubercle bacilli from the lesions in pig's carcasses. Out of 95 submaxillary lymph glands successively examined, one showed the human type of bacillus, and of the others two-thirds were bovine and one-third avian in origin. Their findings corroborate those of workers in America and on the Continent, and support the recommendation that pigs and poultry should not be allowed on the same run. Experiments indicate that the more rapid the chilling of meat, especially beef, the better is the quality. A new discovery is that meat can be cooked directly from the frozen condition, and is much more tender and palatable than when cooked after thawing. The mutton-importing countries are improving their methods of examination in order to lessen the amount condemned in the London market for caseous lymphadenitis. During the year 28 naval officers were trained in meat inspection at the central markets, and the London School of Hygiene and Tropical Medicine was added to the institutions according facilities for teaching purposes. Progress continues to be made in securing clean methods in transport and handling of meat.

During the warm weather there were many complaints of offensive smells from street gullies and sewer ventilators. To deal with the former old pattern gullies are being replaced by a more up-to-date design. As regards the sewers, it has been the practice to seal the ventilators on the receipt of complaints, but in view of the serious explosion in an adjoining area in 1928 this practice has been discontinued. It is difficult, however, to obtain the permission of owners to allow ventilating shafts to be erected against their buildings. The size of the pigeon population has been again complained of and a campaign is to be conducted during the current year similar to that of 1928. Rat repression and rat proofing continue vigorously, and the brown rat is not in evidence so much as the black.

REPORTS OF SCHOOL MEDICAL OFFICERS.

—	No. on roll.	Average attendance.	Routine inspections.	Special exams. and reinspections.	Percentage of defects.
Bootle	11,628	10,443	3697	18,272	25·4
Wiltshire ..	28,104	25,245	9610	12,319	25·15

Bootle.

Dr. F. T. H. Wood draws attention to the twofold responsibility of the education authority in respect of the physical welfare of school-children: (1) to give all kinds of medical care; (2) to assist sound physical development and to afford instruction in the laws of health. In both directions the duties are being fulfilled at Bootle, where the need for assistance in carrying out the second has led to the appointment of a master and mistress of physical training. These full-time instructors, while primarily engaged in the training of secondary school pupils, have a portion of their time allotted to elementary schools; their expert knowledge should enhance the value of the training given, supplemented by out-of-school activities, such as play centres, the recently acquired playing field, school sport, and swimming. The instructors' work is of special importance in the secondary schools where the defects fall largely under the three headings of defects of teeth, defective vision, and deformities; the figures for all other conditions in Dr. Wood's table are relatively small, due no doubt to the care of the parents and the family doctor. Abnormalities are treated at the clinic for remedial exercises, which was attended by 440 children, of whom 95 were below school age. The conditions treated included mouth breathing, spinal curvature, rickets, and flat-foot, as well as more serious defects resulting from infantile paralysis and fractures. Turning to general medical care, the total number of examinations this year shows a substantial increase in spite of a slight fall in the school population. The appointment of an additional woman medical officer will make it possible to give more attention to pre-school children, which Dr. Wood regards as important in agreement with the dictum of Dr. C. J. Thomas that the infants' departments of schools are "receivers of damaged goods." It is proposed to establish two nursery schools and to make more use of the school clinics for pre-school children. A loss to the staff is the removal of Dr. A. B. Williamson, whose investigation of rheumatism has led him to conclude: (1) The percentage of rheumatism in Bootle is 1·8. (2) Girls are more liable to be affected with the choreic form of the disease. (3) The school distribution and the social status of the cases bear out the fact that the condition is most prevalent among the children of the skilled artisan class. (4) There is no evidence to suggest the existence of a so-called rheumatic type of child.

(5) There appears to be no association between rheumatism and dental decay. (6) The increased family incidence of the disease (30 per cent.) may be due (*a*) to the influence of similar environmental conditions, or (*b*) to an hereditary predisposition, or (*c*) to a carrier infection. (7) Evidence of a relationship between rheumatism and damp dwellings is inconclusive. (8) There seems to be a definite association between tonsillitis and rheumatic infection, and every child subject to attacks of tonsillitis should be observed closely for commencing signs of rheumatism. (9) Tonsillectomy appears to be justified in all non-choreic cases, but to be of most value it must be done early in the disease. The operation has no obvious effect in cases with chorea. The operation should not be performed until a previous attack of tonsillitis has completely subsided. (10) Care and supervision at a rheumatic clinic are not enough to prevent relapses. Institutional and convalescent treatment are probably the best means we have at present of combating the disease. (11) Every child presenting vague unaccountable signs of ill-health should be examined periodically with special reference to its heart. The conclusions which rest on a sound basis agree with those of similar inquiries except as to the correlation with poverty. The only obvious weakness in the service at Bootle is the absence of special schools.

Wiltshire.

Dr. C. E. Tangye's report is typical of that of a well-ordered but not exceptional county. The staff has been strengthened by the appointment of a part-time woman doctor and an additional nurse. Dr. Jean Murray is also part-time medical officer of health for a district, and this principle of combining appointments has been definitely approved by the county committees concerned. It helps to coördinate school and public health work, as does the appointment of school nurses who are also health visitors. The scheme for the supervision of all children up to school age is said to be developing, but no specific mention is made of facilities for their treatment. The medical inspectors have investigated the sanitation and hygiene of the schools and improvements have resulted. Following a lead given by the London County Council the time-honoured sloping-topped desk, which had many disadvantages, has been given up in favour of a new type of flat-topped desk. An apparent increase in the numbers of under-nourished children is not to be taken to indicate any general lowering in the standard of nutrition. There is now a regular system of treatment by giving cod-liver oil and milk, and the inspectors class children as ill-nourished if they would be likely to benefit by this addition to their diet. Cleanliness has shown striking improvement, the number of children found unclean last year being only 2032, compared with 4711 in the previous year. The decrease reflects great credit on the school nurses, the more so as no cleansing stations are provided. The nurses give demonstrations and advice to mothers, and provide special combs at cost price. Clinics for ear, throat, and nose affections have been established throughout the county. Mr. Miles Atkinson reports that recurrence of aural infection can almost always be prevented by removal of infected tonsils and adenoids if the tympanic membrane is intact at the time of operation; that cases of otorrhœa of recent origin with anterior perforations indicating disease of the throat can be cleared up by an operation on the throat without other treatment than cleansing of the ear, and that in most cases the perforation will heal; that cases with a central perforation may be dried, but the tympanic membrane is unlikely to heal; and that cases with an almost total loss of the tympanic membrane with long-standing otorrhœa, especially when it follows one of the specific fevers, are unlikely to dry without some form of mastoid operation. Aural surgeons would no doubt largely agree with him that operation, when indicated, should always be performed, but they would add that ionisation is beneficial in many cases after operation and occasionally even before it. Dental work is satisfactory; 70 per cent. of the children requiring treatment received it; in the northern area the percentage was over 82. The committee hopes for still better figures, and is recommending the appointment of another dentist and the promotion of Mr. W. H. Liebow, L.D.S., to be senior dentist in charge of the scheme. As in many other rural areas, there are no special schools, but the Wilts. authorities have made an effort to secure accommodation in residential schools.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 6TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 95 (last week 160); scarlet fever, 2188; diphtheria, 1529; enteric fever, 28; pneumonia, 1010; puerperal fever, 55; puerperal pyrexia, 112; cerebro-spinal fever, 12; acute poliomyelitis, 7; acute polioencephalitis, 1; encephalitis lethargica, 13; dysentery, 24; ophthalmia neonatorum, 93. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Dec. 9th–10th was as follows:—Small-pox, 206 under treatment, 5 under observation (last week 236 and 2 respectively); scarlet fever, 1925; diphtheria, 2163; enteric fever, 13; measles, 80; whooping-cough, 110; puerperal fever, 21 (plus 5 babies); encephalitis lethargica, 121; poliomyelitis, 1; "other diseases," 49. At St. Margaret's Hospital there were 15 babies, plus 5 mothers with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 2 deaths from small-pox, 3 (0) from enteric fever, 45 (2) from measles, 6 (2) from scarlet fever, 17 (2) from whooping-cough, 31 (7) from diphtheria, 49 (10) from diarrhœa and enteritis under two years, and 43 (8) from influenza. The figures in parentheses are those for London itself.

The fatal cases provisionally classified to small-pox were assigned to Wood Green U.D. and Dagenham U.D. Details of the former were given in our issue of Dec. 6th (p. 1260). The fatal cases of enteric fever were reported from Hastings, Bury, and Hull. Ten deaths from measles were reported from Liverpool, 8 from Hull, 6 from Swansea, 5 from Bristol, and 3 from Birmingham (Dublin reported 14 cases in the same week). Five fatal cases of diphtheria occurred at Birmingham and 3 at Liverpool. Diarrhœa accounted for 5 deaths at Manchester and 4 at Liverpool.

The number of stillbirths notified during the week was 281 (corresponding to a rate of 41 per 1000 births), including 43 in London.

A "PRUDENTIAL" BED.—The Prudential Assurance Company has promised an annual subscription of £500 for the endowment of a maternity bed in St. Mary's Hospital, London. The money is being given in recognition of the hospital's maternity work, "and as a manifestation of interest in the movement for better maternity services throughout the country."

"MOORFIELDS HOSPITAL" EXTENSION.—Prince Arthur of Connaught last week opened new private wards and nurses' quarters at the Royal London Ophthalmic Hospital, City-road, E., of which he is President. The block of private wards contains 17 rooms and a theatre, and 39 rooms have been added to the nurses' quarters. Including the addition of a floor to the existing building, the work has cost £39,000.

A HOSPITAL "DRAW."—For the last ten years Mr. William Charlton, a stonemason in the employment of Newcastle-on-Tyne Corporation, has organised an annual "draw" for the benefit of Newcastle Eye Hospital as a mark of his gratitude as a former patient. Last year £550 was raised in this way, but last week the police, acting upon instructions from the Home Office, stopped the sale of tickets and the "draw" has consequently been abandoned.

CORRESPONDENCE

VALUE OF RAMISECTION IN CASES OF SPASTIC WEAKNESS.

To the Editor of THE LANCET.

SIR,—In your issue of to-day Mr. Bankart, under this heading, says that "Lord Moynihan was unfortunate in his choice of the researches of Hunter and Royle to illustrate 'the somnolence of physiologists.'" Using this as preamble, he occupies two columns of THE LANCET in a dissertation upon the value of "ramisection in cases of spastic weakness," to which I quite deliberately made no reference whatever. I wrote:—

"Just as physicians, to use Sir William Osler's phrase, were 'caught napping' by surgeons who asserted the frequency and created or amplified our acquaintance with the symptoms of gastric and duodenal ulcer, and of cholelithiasis, so the physiologists have similarly had their somnolence proclaimed by the researches of Royle and Hunter, Wade of Sydney, Robertson of Toronto, Judd, Adson, Learmonth, and others, as to the sympathetic nervous system, and its influence upon maladies of men so diverse as Raynaud's disease, Hirschsprung's disease, endarteritis obliterans, and retinitis pigmentosa. Learmonth's recent investigations carry the possibilities of helpful or remedial surgery still further."

The work of Hunter and Royle, whatever may prove to be its value in the very restricted field of surgery with which Mr. Bankart is here concerned, was, as everyone should know, the inspiration of Wade in his valuable pioneer work upon the intestines, and was the direct incentive not only to the new work of the surgeons whose names I quote, but to fresh and eager anatomical and physiological inquiry in many parts of the world. It is not to Royle's early operative work, but to his fecund influence upon the surgery of the sympathetic system that I referred in the paragraph which Mr. Bankart curtailed. By so doing he has failed to appreciate the full significance both of the carefully ordered sequence of names and of the special list of diseases selected for enumeration. With wider vision than Mr. Bankart allows himself, I therefore still regard my choice of illustration as singularly happy and most appropriate.

I am, Sir, yours faithfully,

Portland-place, W., Dec. 13th, 1930. MOYNIHAN.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—The addition of pasteurised or separated milk to the ordinary mixed diet of school-children has been proved of enormous value by the work of Corry Mann and other observers. That fact, however, does not affect the question of the true nutritional value of milk. The study of the problem as it stands at the present time reveals the fact that the most enlightened thinkers in those countries which have adopted pasteurisation as the main plank of milk selling are recognising more and more clearly that treated milk is not of equal value to fresh milk, and this becomes particularly clear when these different types of milk are given to young children; that is to say, those whose food-supply is strictly limited.

The truth of this probability is gradually emerging as the result of researches which are being carried out in the United States and in Holland. In this country, up to the present time, no comparable work has yet been done, and it is urgently required. It would seem, therefore, to be a great pity to suggest that in future Certified milk shall be the only fresh milk-supply; for in practice the cost of this milk makes it a luxury article which can be consumed only by those with substantial incomes. The adoption of such a policy, therefore, will reduce London, for instance, to a position comparable with that of New York, where not more than 2 per cent. of the total milk-supply is sold as fresh milk, and those who are in most need of it are unable to get it. In England, on the other hand, we have at present not only Certified, but also Grade A (Tuberculin Tested) milk, which is being sold in increasing quantities, particularly in the East End of London, and in many provincial towns. In the East End of London such milk is sold at a price which the working classes are obviously prepared to pay, although one hopes as time goes on it may still be further reduced from 2*d*. a quart extra, which it costs at present, to perhaps not more than 1*d*. extra, the price that is paid in one district of London, Reading, and some other provincial towns. Experience has shown that it is quite possible to put milk of this character into the house of the consumer, even in London, satisfactorily. In doing so the best interests of the consumer and of the farmer are served, for the one gets untreated milk and the other a fairer share of the monies which are paid for it. It would appear, therefore, that it is very important that we shall preserve an open market for the sale of fresh milk from licensed tubercle free herds at a reasonable price, until such time as we are satisfied that other forms of milk possess the nutritive value that all of us desire in the best interests of the health of the nation.

To pasteurise the whole milk-supply of the country is impossible, until such time as the whole population has become urban. With all due deference to the very distinguished men who have appealed for universal pasteurisation of milk except Certified milk, I would suggest that even in spite of their practical knowledge of dairy farms and the milk industry, the question should be approached with very great care and that the tampering with one of Nature's foods, except to insist on its being provided from healthy cows under perfectly clean conditions, may, with increasing knowledge be found to be putting the hands of the clock back, and eventually doing more harm than good to the health of the nation.—I am, Sir, yours faithfully,

C. MADDOCK,
Hon. Sec., The Certified and Grade A (Tuberculin Tested) Milk Producers' Association.

16, Ormond-yard, York-street, London, S.W., Dec. 15th, 1930.

To the Editor of THE LANCET.

SIR,—I welcome the letter by Lord Dawson, Sir John Robertson, and others, advocating the universal adoption of pasteurisation of milk. At one time I was doubtful as to the desirability of this course, as I feared it might militate against the general adoption of the principle of milk from tuberculin-tested cows, which I believed was the more excellent way. However, having been reluctantly forced to the conclusion that the latter principle, however ideal, is not likely to be realised, at any rate during the present generation, I now feel that universal pasteurisation of all milk other than "Certified" or "Grade A (Tuberculin Tested)" is the only

satisfactory alternative, and the sooner it comes the better. I would suggest that it would be quite feasible to make efficient pasteurisation compulsory provided sufficient notice were given to enable all milk purveyors to make the necessary arrangements and install the necessary plant. Already a very large proportion of the milk-supply of large towns is pasteurised although not always sold as such.

I am, Sir, yours faithfully,

C. KILLICK MILLARD,
Medical Officer of Health, Leicester.

Health Offices, Leicester, Dec. 15th, 1930.

To the Editor of THE LANCET.

SIR,—I am in entire agreement, so far as they go, with the signatories to the letter on pasteurisation of milk in your last issue (p. 1315), but why do they draw the line at "Certified milk"? Has not Certified milk produced undulant fever and septic sore-throat? It cannot be too widely known that no raw milk, certified or uncertified, can be regarded as safe. Improve the milk at the source by all means and all the time, but to neglect to pasteurise it is only asking for trouble. There is nothing sacrosanct about "Certified milk" and its pasteurisation will do it good. I am, Sir, yours faithfully,

J. C. G. LEDINGHAM.

Lister Institute, London, Dec. 13th, 1930.

To the Editor of THE LANCET.

SIR,—The signatories to the letter on this subject are of the opinion that the entire milk-supply—excepting "Certified milk"—should be pasteurised. It would be of great interest if they would explain what advantage would accrue to the general public if pasteurisation of Grade "A" (Tuberculin Tested) milk were made compulsory. The advantage to large wholesale pasteurising firms is, of course, obvious.

I am, Sir, yours faithfully,

D. M. CONNAN.

Public Health Department, Town Hall, Bermondsey, S.E., Dec. 12th, 1930.

HYPOSPADIAS.

To the Editor of THE LANCET.

SIR,—To the recent proceedings at the staff meetings of the Mayo Clinic, at Rochester, Minnesota (Nov. 5th, p. 315), Dr. Hugh Cabot made a communication on the plastic operation for epispadias, hypospadias, and urethral stricture; to his remarks on hypospadias I wish to refer, as the opinion expressed of surgical interference seems to me incorrect.

There is still a widespread opinion that hypospadias is not really amenable to treatment, and that, although many operations have been invented by many surgeons, all of these give such poor results that they are hardly worth doing. For example, the last case which I completed, a case of complete hypospadias with cleft scrotum, had been told by a relative, who was on the senior staff of a large metropolitan hospital, that nothing could be done for him. This attitude is unfortunate because this deformity is a very serious one. It is true that the patient can pass his urine and has complete control, but only a superficial view would regard the condition of no great consequence. To the patient it certainly is a serious disability; he is nervous lest his deformity should be observed, he cannot micturate, as a rule, in the normal way, and he feels different to his fellows. In addition there is a risk that he may drift into sexual irregularity.

It is true, that in all the cases which have come under my personal observation, that is to say, as far as I could observe, there has only been one in which the psychical outlook has been abnormal; I consider that the deplorable habits of some adult pseudo-hermaphrodites are secondarily acquired. Were it only because of this risk, the treatment is worth while. This is specially the case when there has been an error in determining the sex of the patient, who should be made to resemble externally the sex to which he really belongs when he assumes the characteristic garments.

It is very important in cases of sex error to be quite sure that there has been an error, and this will generally necessitate examination under an anæsthetic. I have had two undoubted girls sent to me for the cure of hypospadias. In one of these the labia were united posteriorly giving a very typical picture of an ordinary cleft scrotum. On dividing this union a vagina was revealed leading to a normal uterus. In both of these cases the clitoris was unusually large. In common with all surgeons I have had the gratification of seeing the pleasure of a patient after recovery from an operation, but I have never seen any class of patients whose delight has been so manifest as that in which the deformity of hypospadias has been corrected; and this even when the patient is only a little boy.

Prof. Cabot seems to share the common pessimism, which I would venture to state is not justified. It is possible by the methods which I published, first in 1913 (THE LANCET, 1913, i., 447) and later in slightly greater detail, and after fuller trial in my Hunterian Lecture (THE LANCET, 1926, i., 323), to perform an operation which is really worth while doing. In this latter communication photographs were published of adults who had been operated upon in childhood with completely satisfactory results—that is, the penis is of average size, straight or with only the slightest curve on erection, with the opening of the urethra at the end of the glans. I have operated on a good many cases since 1927 with uniform results. In no case has there been failure to restore the urethra, although in some cases secondary operations to close fistulæ have been needed.

The principle of the operation, as described in full detail in the paper quoted above, is based on Duplay's method; but before attempting to reform the urethra, the prepuce is transplanted along the sides of the penis so as to broaden the organ and provide enough tissue for the final closure. The straightening of the penis is obtained, not by dividing bands, but by dissecting up the whole of the contracted urethra. Prof. Cabot states that in the very minor cases in which the cleft in the urethra does not extend beyond the glans, no operation should be performed. This is often true, but the reason for not operating is not that the cleft cannot be closed; for, although I have had failure of union in other parts of the urethra, it is a curious fact that I have never failed to get union of the glandular part at the first attempt. The operation can be done and is worth doing at any rate in the type of case where there is stenosis of the displaced meatus, since the slitting up of this displaces the opening of the urethra a good deal farther back. It is equally possible to deal with the most advanced cases. I have operated upon four cases of sex error; two of these had been brought up as girls until they were adolescent, one till he was four years old and in one case the error had only persisted for a few months.

There is indeed no difficulty in the operation and

several surgeons could testify to their success in the procedure; of course it must be a delicate operation, requiring fine sutures and careful handling—I now use fine black silk for the mucous membrane and ophthalmic silkworm gut for the skin. I have never found it necessary, as Prof. Cabot advises, to divert the stream either by perineal or suprapubic drainage. With careful suturing and by keeping the parts moist with flavine 1–3000 union takes place readily, and, if fistulæ form, they can always be closed. The operation which I have described has this advantage that no tissue is removed and, if union fails to take place at the first attempt, it is always possible to make another in two or three months, after the scar has softened.

I am, Sir, yours faithfully,

ARTHUR EDMUNDS.

Queen Anne-street, W., Dec. 15th, 1930.

NEPHROSIS AND ŒDEMA.

To the Editor of THE LANCET.

SIR,—The article by Dr. T. Izod Bennett, Prof. E. C. Dodds, and Dr. J. D. Robertson in your issue of Nov. 8th (p. 1006) is very interesting and instructive. Some of the conclusions, however, require comment. Briefly stated, the authors present two points of importance:—

First, that lowering of the plasma protein, even when due to other than renal causes, may cause œdema.

Secondly, that the absence of renal lesions in cases with œdema resulting from extrarenal loss of protein speaks against the "diabetes albuminuricus" theory of nephrosis.

With the first point I am in hearty accord. While the material presented is not wholly illustrative of this principle, it confirms the idea which I first propounded many years ago, and which now seems to be a well-established fact.

From the second point I differ emphatically. In formulating the theory of "diabetes albuminuricus" I never stated or believed that lowering of the blood protein in itself is the cause of renal lesions. I stated solely that *the renal lesions in nephrosis were not the cause of the albuminuria*—which is a very different thing. The confusion of these authors on this point apparently arises from the attempt to correlate the work and conclusions of Barker and Kirk, who, as others have done before them, found that the repeated removal of plasma causes œdema; and, in addition, that dogs so treated ultimately show changes in the kidneys which they claim resemble the renal changes of chronic nephrosis. While this observation of Barker and Kirk may be of significance and point to the influence of nutritional deficiency upon various organs and tissues, including the kidney, *the work requires confirmation, not only in respect to the occurrence of renal lesions following plasmapheresis, but also that the lesions so produced do actually resemble the changes observed in the kidneys of chronic nephrosis in man.* Moreover, the conclusions of Barker and Kirk relative to the renal lesions have nothing in common with my views in regard to the ætiology and pathogenesis of nephrosis, particularly as expressed in the concept "diabetes albuminuricus."

Bennett and his collaborators liken the conditions obtained in their clinical cases to the plasmapheresis experiments of Barker and Kirk, but they fail to find any renal lesions; hence they say:—

> "We must therefore assume that in the human subject the diminution of plasma proteins, even for a considerable time, does not produce changes in the kidney.
>
> "The importance of this," they continue, "in relationship to the ætiology of nephrosis is, we feel, very great. The 'diabetes albuminuricus' theory ascribes the cause of nephrosis to a modification in the protein molecule rendering it permeable to the kidney, with the result that massive loss occurs in the urine. Œdema then results and the renal changes which occur have been thought to be due to the loss of plasma proteins. Unless it be argued that the mere passage of the abnormal protein through the kidney is capable of producing renal lesions, it would appear that this argument falls to the ground, since extrarenal plasmapheresis in man does not damage the kidney. This forms a strong argument in favour of the view that the kidney is at least one of the primary seats of damage in nephrosis, and that the renal lesion causes the alteration in the constitution of the plasma proteins, and not vice versa."

The loss of protein from the blood through experimental or spontaneous plasmapheresis (effusions into the serous cavities) is totally different from that resulting from excretion of protein by the kidneys. The formation of effusions (ascites), such as these authors have observed, is due either to inflammatory or local static disturbances, and the process involved is one of simple filtration of blood plasma. The proteinuria of chronic nephrosis is of a different nature and is, I believe, an instance of selective and preferential excretion. One need but compare the composition of the urinary proteins of any case of nephrosis with what Bennett, and his co-workers found in the serous effusions of their cases, and the difference becomes at once apparent. We must, therefore, assume that the proteinuria of chronic nephrosis has back of it some alteration in the biochemistry of the plasma proteins themselves.

Proteinuria occurs either as a result of renal damage or because the proteins are abnormal in character, and hence are removed as foreign substances. *Histopathology has thus far failed to account for the proteinuria of chronic nephrosis*, and the conclusion (from all the evidence presented by this disease) is wholly inescapable that this proteinuria is of extrarenal origin—due in all probability to a biochemical change in the proteins themselves. That proteins which are foreign to the body can be excreted by normal kidneys is well known. Hæmoglobinuria and albumosuria afford us two striking examples of this fact. There is some evidence also that the continued excretion of foreign protein can ultimately damage the kidney. The profound renal changes in Bence-Jones albumosuria are well recognised, and this, we know, is primarily an extrarenal disease.

The absence of kidney lesions in the cases cited by Bennett and his collaborators is as it should be. The mere loss of protein from the blood through channels other than the kidneys is not in itself sufficient cause for alteration in the kidney structure. One cannot as yet offer a satisfactory explanation for the kidney changes observed in human nephrosis. It is justifiable, however, to state that they constitute purely a secondary phenomenon and at times may be practically absent. I have recently seen demonstrated by a very competent pathologist the kidneys from a case of nephrosis in a child, which showed no more deviation from the healthy state than is generally to be seen in the kidneys in any long-continued wasting illness. It must also be remembered that in any long-continued lipæmia there may be storage of lipoid in the renal epithelium affecting the configuration of the cells. It is noteworthy that in none of the cases presented by Bennett and his collaborators was any lipæmia at hand.

If we analyse the evidence and the arguments which Bennett and his co-workers present we must conclude that these account for the occurrence of œdema, but that they have no bearing on the question of the pathogenesis of nephrosis.

I am, Sir, yours faithfully,

New York, Dec. 3rd, 1930. ALBERT A. EPSTEIN.

AN X RAY DEMONSTRATION.

To the Editor of THE LANCET.

SIR,—The publication of Dr. A. E. Barclay's Silvanus P. Thompson lecture in your last issue makes me think that some of your readers would like to be reminded that we owe to Prof. Thompson the first public medical demonstration of X rays in this country. Early in 1896 the Clinical Society of London invited him to tell the members about this new discovery. He kindly said he would, and a special meeting was held in the Society's rooms in Hanover-square on March 30th, 1896. Nearly 400 members, THE LANCET tells us,[1] were present—that is, almost four-fifths of them. The report of the Council says the meeting "was most successful, and a vote of thanks was unanimously accorded to Prof. Thompson for his great kindness." The audience was thrilled, most seeing for the first time actual prints of bones and pieces of metal. Silvanus Thompson was a prince among lecturers. I have never heard a better demonstration or attended a more memorable medical meeting.—I am, Sir, yours faithfully,

W. HALE-WHITE,
Hon. Secretary, Clinical Society of London, 1893–96.

Dec. 15th, 1930.

RESISTANCE TO TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Dr. Burrell suggests in his Mitchell lecture that the resistance resulting from tuberculous infection is similar in nature to the tolerance acquired to drugs like morphia and alcohol, and is different in kind from the immunity to small-pox which results from successful vaccination. He concludes that it is wrong to attempt to protect by means of tubercle bacilli and that the correct procedure is to eliminate infection altogether or at least to dilute it as far as possible.

In these countries the first alternative is impracticable, so the second method—i.e., to dilute infection as far as possible—is the ideal to be aimed at. But the results which may be achieved by this latter method are exactly the results claimed by those who hold the infection-immunity-theory. And there appears to be a mass of evidence to support their views. For instance, Dr. Burrell mentions the difference in the results of infection amongst races where tuberculosis is not endemic and the results observed amongst civilised races. Also, not a single child born in Papworth Village Settlement has ever shown signs of tuberculosis, although the opportunities for juvenile infection must necessarily be very extensive. Post hoc or propter hoc, these children have acquired an unusual degree of resistance. Is it to be explained that they have merely become tolerant as the drug addict becomes tolerant? If so, this tolerance should be associated with stigmata analogous to those of the drug addict. Yet such is by no means the case. Nor has it been observed that persons who have successfully resisted infection are any the worse from the "tolerance" they have acquired. Does it not appear more likely that this resistance is, in fact, of the same nature as the immunity acquired towards other infectious diseases?

But if protection results from mild infection, one must explain why patients with mild tuberculous lesions, such as a small pleural effusion, are more liable to a recrudescence of active disease than others. Dr. R. C. Wingfield advances a very attractive hypothesis which goes far to explain this apparent anomaly. According to this theory resistance to tuberculosis is two-fold—namely, bacteriolytic and antitoxic. The bacteriolytic type brings about the death of the bacillus and terminates all its activities. The antitoxic type does not kill the bacillus but merely tends to counteract its toxic action. A person who possesses the first, or both, types is adequately protected, whereas one possessing only the antitoxic type is only partially protected, and is liable to a recrudescence of the infection.

Is it possible that the difference between the resistance to small-pox and the resistance to tuberculosis is a difference in degree, not in kind, and that the difference is merely due to the difference in the antigenic properties of the infecting material in each case?—I am, Sir, yours faithfully,

JAMES J. CONNOLLY.

Peamount Sanatorium, Co. Dublin, Dec. 15th, 1930.

[1] THE LANCET, 1896, i., 935.

OBITUARY

WILLIAM MACLEAN, M.B. Edin., D.P.H.

Dr. William Maclean, county medical officer of health for Ross and Cromarty, died at Dingwall on Dec. 10th after a brief illness. For the last 20 years he had never been robust, but had continued his work with ardour, and exercised to the last a profound influence over the development of medicine in the North of Scotland. He was educated at Dingwall and Inverness and later at Edinburgh University; in his younger days he was an accomplished classic, and always placed Gaelic beside Latin and Greek. After graduating in medicine in 1892 he went into practice as assistant to Dr. Bruce of Dingwall, and later in the old cathedral town of Fortrose. During these years was laid the foundation of his exceptional learning in prehistoric archæology. He discovered and investigated a settlement of the Mesozoic age in a cave near Rosemarkie, and to the end of his life retained a specialist's knowledge of this department. In 1908 he was appointed superintendent of the newly opened Seaforth Sanatorium, then the first institution of its kind in the North of Scotland. With this began his interest in public health, and in 1920 he succeeded Dr. Bruce as chief medical officer for the county. As an organiser of medical services he moved with ease among the developments of recent years. Few lawyers could surpass him in interpreting an Act of Parliament and his advice was sought repeatedly by the Department of Health. He was a prominent member, and for a time chairman of the consultative committee on the Highlands and Islands.

"In all gatherings of the profession," writes a colleague, "Maclean exercised a unique personal ascendency. He had the habit of stating a case with tempestuous frankness that was never in the least confused. In public speech the most direct of men, yet he made not even temporary enemies. He meddled in no controversies, and with supreme intellectual independence he would belong to no party. His experience had given him an immense reverence for the ethics of medicine. He feared the increasing mechanisation of our calling, although he was the first to test any fresh device and seemed to assimilate every modern procedure that appeared.

He was a man devoid of all pretensions. He had the secret of simplicity and cared little for his reputation and nothing at all for fame. Always one had a sense of the fascinating duality of his nature; the combination of fundamental sympathy towards the average man, with the loftiest intellectual capacity. His most characteristic moments were when discoursing upon some intricate problem that lay near his mind. It might be the origin of the Iberians, or the style of Hilaire Belloc, a clinical difficulty, a new salmon fly he had invented or a flint arrow head he had found in a field. A torrent of vivid expressions poured out like champagne. An inscrutable and charming smile followed, while he would listen without impatience to one's immature argument. Alas, that there was no Boswell to record these memorable conversations! For Maclean had a horror of dilettantism and could never be persuaded to publish.

"Estimated by ordinary achievement, his life was that of any conscientious worker. But his own peculiar contribution to the betterment of social and professional life cannot so be measured, and the tradition he left will be felt as in the years his work unfolds. For he never seemed to be old. He did not set out to influence others or to teach his assistants. They followed him instinctively and prized his example."

Dr. Maclean married Louise Fowler Grant. He leaves no family.

THE LATE LIEUT.-COL. N. S. SIMPSON, I.M.S.

Lieut.-Colonel W. G. Hamilton, I.M.S. (retd.), writes: "I should like to pay a short tribute to the memory of Lieut.-Colonel N. S. Simpson who was brutally murdered in his office at Writers' Buildings, Calcutta, on Dec. 8th. Colonel Simpson succeeded me as inspector-general of prisons in Bengal in October, 1929, after we had worked together in close association for several years. I always found him a loyal colleague and a staunch friend. He was a humane man, holding enlightened and very progressive views on the treatment of prisoners. In the summer of 1929, when he was convalescing from a severe attack of enteric fever, he studied the English prison system while on leave in this country. He kept his medical knowledge up to date and did good work in investigating the incidence of hookworm amongst the prison population of Bengal. He had a good eye for all ball games and was one of the best amateur billiard players I have known."

PANEL AND CONTRACT PRACTICE

A German Critic of Health Insurance.

Dr. Erwin Liek, a surgeon in Danzig, has written a book called "The Doctor's Mission" [1] in which he deplores the damage done to Germany by various forms of social insurance.

At present, he says, sickness insurance does not fulfil the object of its founders—namely, to treat and cure disease. On the contrary, it has become a means of obtaining doles rather than health, and the "will to be well" is everywhere undermined because a medical certificate means pay without work. The system weakens the manliness of the people and causes their physical and moral degeneration. "As soon as men and women have gratuitous medical and surgical treatment thrust upon them they are apt to search their bodies for signs and symptoms of diseases as carefully as a monkey searches for fleas." Thousands say to themselves, "As I am insured I must see to it that I receive every possible benefit I can obtain," and the case-books of panel doctors show that they are overwhelmed with ridiculous trivialities. Panel doctoring produces and carefully nourishes general neurasthenia and hypochondriasis, and two-thirds of it is superfluous. Where true disease is present "we notice immediately and without exception that the process of healing and the time of cure are greatly extended as soon as an individual who previously was uninsured has become insured under the social insurance scheme."

National insurance, in Dr. Liek's opinion, has destroyed the natural and normal relations between doctor and patient. With a private patient the doctor's only concern is to give relief and cure, but in panel work he must constantly ask himself: Is this a case of malingering? To show how grossly the system is exploited Dr. Liek quotes the following facts:—

Of the 7,918,432 members of a group of insurance societies, 1,259,016 declared in one year that they were incapacitated through sickness and were invited to undergo re-examination after the granting of a sickness certificate by their panel doctors. No less than 198,142 immediately announced that they were well, and that no further examination was called for. A further 219,913 declared to the re-examining doctor that they had suddenly become quite well. Of the remaining number, 292,133 workers who had pretended to be incapacitated were found on re-examination to be able to work. In other words, out of the 1,259,016 nominally incapacitated, no less than 710,188, or 56·5 per cent., were quite able to work.

The sickness insurance organisations become mere dole payers as soon as a period of unemployment begins. "In a little town known to me," says Dr. Liek, "ten railway workers were dismissed on a certain day. Out of these ten men no less than nine were immediately certified as incapacitated by illness by their panel doctors. A friend of mine, a manufacturer, had to dismiss 50 women workers. During the next few days 49 of them received the certificate that they were incapacitated by illness which enabled them to draw sickness pay."

As at present organised sickness insurance "does shoddy work, is inefficient, and is at the same time expensive." In Danzig 7 per cent. and in Berlin 6 per cent. of the worker's income is expended on this alone. In 1927 the cost of the scheme worked out at £4 3*s*. per head (or including dependents £2 8*s*.). This amount is far too high. "I do not think that many uninsured civil servants and professional men are prepared to pay year by year 7 per cent. of their income to doctors and chemists." The expenditure on the huge bureaucratic organisation is gigantic. According to the *Arztliche Mitteilungen* there are in Germany 29,403 insurance doctors to cure the insured sick, and no less than 27,000 officials in the employ of the insurance organisations. Moreover, the spirit of bureaucracy has invaded medical practice.

"Having to attend impossibly large numbers, doctors become accustomed to doing rush work, and they lose the capacity and inclination to examine and treat their patients with conscientious care. After all, the question of curing the patient is less important than that of carrying out the regulations of the organisation which pays the doctor! A large number of insurance doctors consider it their principal duty to fill up forms for official use, keep books, &c."

If there were no social insurance free competition among medical men would lead automatically to

[1] The Doctor's Mission: Reflections, Reminiscences, and Revelations of a Medical Man. By Dr. Erwin Liek. Translated with an introduction by J. Ellis Barker. London: John Murray. 1930. Pp. 276. 6*s*.

success among the able and competent. But "the possibility of making a living by panel practice induces many to study medicine who do not feel the call to enter the profession. It has created medical profiteers and shopkeepers."

Dr. Liek does not believe that the general improvement of the national health is due to national sickness insurance. "Politicians and doctors," he says, "live under the illusion that they have brought about certain improvements for which, as a matter of fact, they are not responsible." He quotes Dr. Stappert as follows:—

"Every day the flood of men and women who clamour for sick-pay is rising. This flood beats ever more strongly against the wall of the medical profession, and doctors must spend their strength, energy, and ability to resist the flood. Otherwise they will be overwhelmed. The social insurance system is rotten to the core, and the edifice would have collapsed long ago, had it not been for the unselfishness and conscientiousness of the medical men."

Under such circumstances, Dr. Liek says, it is incomprehensible that the State continues enlarging the scope of social insurance from year to year. "I am sure that all the social insurance schemes were put forward with the best intention in the world, and they would have fulfilled their object if all men were animated by unselfishness, love of their neighbours, joy in their labour, love of truth, &c. As long as men remain men of the type we know, the selfishness of the individual will prevail over his higher sentiments and will nullify the aims of philanthropists and legislators who devised these schemes."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

NURSES' WAGES AND HOURS.

IN the House of Commons on Dec. 10th Mr. BROCKWAY asked leave to bring in a Bill to lay down minimum wages and maximum working hours for the nursing profession. He said there was in the press at present a discussion as to the reason why the number of recruits to the nursing profession was falling. He suggested that one reason was the effect of the conditions under which the members of the profession were employed. In 1927 a very representative conference considered the question of medical organisations, hospitals, and approved societies, over which the present Minister of Pensions (Mr. Roberts) presided, and the opening address was delivered by the present Prime Minister. In that address Mr. MacDonald used these words: "Our object is to improve the conditions of the nurses. The work is onerous, and because they have given their services with such extraordinary devotion in the past no one has any right to assume that much need not be done to show our gratitude, not merely in words, but in a way that will materialise to their advantage." This Bill was an attempt to give effect to those words. In connexion with that conference a report was issued based on a questionaire which had been answered by 138 hospitals, poor-law infirmaries, district nursing associations, and he was assured by authoritative nursing organisations that the facts in the report were substantially accurate. It was on those facts that he based his case to-day. His Bill would apply to two categories in the nursing profession; in the first place, to the nurses employed by hospitals and in similar institutions, and, in the second place, to the large number of women employed as district nurses. The minimum wages and maximum hours which he proposed were those already in operation in the best hospitals and institutions, and therefore the proposals in the Bill were practicable. In some hospitals a 44-hour working week was in operation; in others, the week was one of 66 hours, an average of 11 hours. In cases where night duty was performed, the working week was sometimes one of 84 hours, or six shifts of 14 hours. But in many cases the 12-hour night duty was common. Of particular importance in this connexion were the probationers, who did a great deal of the work of the hospitals and were simultaneously students and had to prepare for examination. The Bill proposed that for all nurses there should be a minimum working week of 48 hours, except in cases of emergency, where the time should be made up at a later period. So far as wages were concerned, the maximum wage of £40 per year was now paid to some probationers, £75 to nurses, and £85 to sisters. His proposal was that those figures, already paid in the best hospitals, should become the minimum for all hospitals. Again, the need for legislation of this kind was illustrated by the fact that in some hospitals the salary for probationers was actually as low in the first year as £1 a month, or 4*s*. 8*d*. a week; in the second year £16; and, in the third year, £20. In some cases the nurses were only paid £30 a year after three years' training, and sisters were only paid £40 a year not only after three years' training but many years' service as nurses. He suggested that in those cases the rates for the probationers should be a minimum of £40 in the first year; £50 in the second; and £60 in the third. For nurses they should begin at £75, rising in the second year to £80. For sisters the rates should be £85, rising within five years to a minimum of £100. In the case of district nurses he suggested that the minimum rate should be £85, rising by £5 annually to £100, where board, lodging, laundry, and uniform were provided, and £185, rising by £5 annually to £200, where these were not provided. Nurses were performing a great service to the whole of the community. The least the community could do was to save them from working in a sweated profession.

Leave was granted, and the Bill was brought in amid general cheers.

UNEMPLOYED PERSONS AND HEALTH INSURANCE.

On Monday last in reply to a question whether those persons whose insurance lapsed at the end of the present year as a result of prolonged unemployment would be enabled to continue drawing benefit until legislation was passed, Mr. GREENWOOD (Minister of Health) referred to the terms of a financial resolution in connexion with the National Health Insurance (Prolongation of Insurance) Bill, which reads as follows:—

"That it is expedient (*a*) to amend the sub section substituted by the National Health Insurance Act, 1928 (hereinafter referred to as 'the Act of 1928'), for Subsection (3) of Section 3 of the National Health Insurance Act, 1924 (hereinafter referred to as 'the Act of 1924'), by providing that a person who has, under the said substituted subsection or under that subsection as applied by the regulations made under Section 23 of the Act of 1928, been treated as an employed contributor insured under the Act of 1924, shall continue to be so treated until Dec. 31st, 1931, if he satisfies the condition contained in paragraph (*a*) of the said subsection and also the following condition, that is to say, if he proves within the prescribed time that throughout the year immediately preceding the end of the period during which he was by virtue of the said substituted subsection treated as an employed contributor insured under the Act of 1924, he was at all times when not employed within the meaning of the Act of 1924, either available for but unable to obtain employment within the meaning of the Act of 1924, or incapable of working by reason of some specific disease or bodily or mental disablement of which notice was given within the prescribed time; (*b*) to authorise the payment out of moneys provided by Parliament—(i) of a

sum equal to 36 contributions (at the rate of 9*d.* in the case of a man and 8½*d.* in the case of a woman) in respect of every person to whom this resolution applies, such sum to be paid or credited to the fund or account out of which the benefits to which that person is entitled are defrayed; and (ii) of the additional cost of benefits under the Act of 1924, and the expenses of administration of those benefits (so far as such cost and expenses are payable out of moneys provided by Parliament) consequent on the provisions of paragraph (*a*) of this resolution."

Mr. GREENWOOD said an agreement had been arrived at which would enable the Bill to become law this week. The purpose of the money resolution was to retain in insurance a number of people who under the existing law and regulations would cease to be in insurance for health insurance and widows' and old age pensions at the end of this year. The Government desired to retain them in insurance at the expense of the Exchequer.

The resolution was agreed to.

SLAUGHTER OF ANIMALS BILL.

In the House of Commons on Friday, Dec. 12th, Lieut.-Colonel MOORE, in moving the second reading of the Slaughter of Animals Bill, said its object was to ensure that all animals slaughtered in slaughter-houses and knackers' yards in England, whether for human food or otherwise, should be humanely killed. It provided that all animals should be instantaneously killed or stunned by a mechanically operated instrument, and provided that all slaughtermen should be licensed so that only competent and reliable men should be engaged in the work. There were provisions for the proper inspection of slaughter-houses and knackers' yards, and it provided that Jews and Mahommedans should be permitted to slaughter animals in accordance with their religious beliefs. The Ministry of Health issued some years ago model by-laws for slaughter-houses providing for the use of mechanical instruments which might be adopted voluntarily by local authorities, and 930 local authorities had adopted those model by-laws which were incorporated in the Bill and applied to the whole country. He had been overwhelmed with letters from all sections of the community expressing surprise that the humane slaughter of animals was not universal, and encouraging him in his efforts to make it so. Every year between 14,000,000 and 16,000,000 animals were killed for human food. The great advantage of the mechanical killer was that it had a captive bolt which was released by the pressure of the cartridge and penetrated the brain of the animal. The type and length of the bolt depended on the type of animal to be slaughtered. There was little strength needed; no skill, but merely ordinary care. The carcass of the animal was undamaged, and the cost was inappreciable. Thousands of practising butchers had voluntarily adopted the system. The Bill exempted Jews and Mahommedans as the promoters did not think it wise to interfere with the fundamental religious views of any race.

Lieut.-Commander KENWORTHY seconded the motion for the second reading.

A BLOCKING AMENDMENT.

Mr. LANG moved "that this House declines to give a second reading to the Bill until the whole subject of the slaughter of animals has been fully investigated by a Select Committee of this House." He said that either the Jewish method of killing animals was humane or it was not—if it was not it was a very serious thing to give exemption under this Bill to one religious community. He was not at all satisfied that the case for the Bill had been made out. When there was a striking difference of opinion among eminent scientific people who had no axes to grind in the matter he thought that the proper course was to subject the matter to further investigation by a Select Committee.

Mr. BLINDELL seconded the amendment.

Mr. GREENWOOD (Minister of Health) said that a substantial and growing number of local authorities had adopted humane slaughter. There was also a change in the attitude of those who represented the meat trade. He warned the promoters, however, that if the Bill got a second reading they would be only at the beginning of their troubles. He suggested that they should set about arriving at an agreed basis which would render the Bill more or less non-controversial.

"THE ABSOLUTE MINIMUM."

After further debate,

Sir R. GOWER said that before the Bill had been presented to the House careful consideration was given by its promoters to all its provisions, and it was felt that those provisions represented the absolute minimum. He was profoundly disappointed at the statement of the Minister of Health, and he appealed once more strongly to the Government to give the necessary facilities for the passage of the Bill. The promoters were prepared to face every difficulty, and if it appeared that they could not get the whole of the Bill they would consider any suggestions which might be made. A short time ago it was stated in THE LANCET that the medical officer of health of Bloemfontein in South Africa reported that many thousands of pigs had been slaughtered by the humane killer, and in no case had there been any complaints as to insufficient bleeding or the keeping quality of the meat. Not very long ago, too, the medical officer for health for Brighton stated in his report that a large number of pigs were slaughtered there by means of the humane killer, and that there was very little evidence of blood-splashing.

MEDICAL SUPPORT TO THE BILL.

Dr. HASTINGS said the physiology of human beings was very similar to the larger animals used for food. Members of the medical profession learned a very long time ago that when they wished to do anything unpleasant to any of their victims it paid them well to render them anæsthetic, and that was the great point in this Bill. Many of the speakers in that discussion had omitted to take account of the fact that the whole question was one of rendering the animal unconscious as quickly as possible. What did it matter how long the animal bled if it was unconscious? He was quite sure that it was much easier to hold a pistol to an animal's head than to wield a weapon which very much resembled a pickaxe, and strike with it an exact point on the skull. Another question which had been discussed was that of blood-splashing. He did not think there was any doubt from the facts that had been brought forward that day that blood-splashing did occur in carcasses killed by all methods; but he suggested that the cause of blood-splashing was mainly fear. They knew very well physiologically that fear had the effect of letting into the blood stream the secretion of the adrenal gland, and one of the effects of this was to raise the blood tension and therefore make bleeding occur more easily. Sufficient stress had not been laid on the importance of licensing those who had to slaughter animals. It was not an easy thing to slaughter an animal, particularly with the knife. Only those who were really skilled should undertake these operations. He would support the Bill.

Dr. LITTLE said he wished to emphasise the point that there was more bungling likely to occur in killing an animal with the poleaxe than with the humane killer, especially if it were in expert hands, and if they could reduce the amount of suffering which was caused by bungling it was their duty to do so. He would emphasise the point made by the Minister of Health as regarded the importance of public feeling in a matter of this kind. In the case of experiments on animals most careful regulations were insisted upon to prevent pain and suffering. The President of the College of Physicians, or the College of Surgeons, if they desired to make an experiment on an animal, were obliged to take, and

quite rightly, the very strictest measures to avoid pain. This method of killing had been demonstrated to be the quickest way of achieving unconsciousness. One of the most eminent physiologists of this generation pointed out that the animal became unconscious before the impact of the blow could be properly effected. That was a statement which should have great weight indeed, as it made it obvious that this was the method which ought to be chosen. In this matter they must take into consideration public opinion and remove a reproach which was a serious blot on the country at the moment.

Lieut.-Colonel FREMANTLE said there was something left to be said on this Bill from the point of view of the professional man who had had to look into the question as a medical officer of health. He had seen the big slaughter-houses in Paris and in various parts of Germany, and had noted the contrast between those big abattoirs, where everything was done so well, and the slaughter-houses in this country. It was for that reason among others that he welcomed this Bill as a step in the direction which they had been keen on taking for so many years. By sending the Bill to a standing committee they were not prejudicing the case of the bacon-curers, but by sending the Bill to a Select Committee they would tie up the case interminably against the general feeling of the House, and he believed the general feeling of the health profession, scientific men, and humane people.

AMENDMENT WITHDRAWN.

Mr. LANG said in view of the statements they had heard that afternoon from the Minister of Health and others, that only an agreed measure was likely to reach the Statute Book, he would not press the matter to a division, but would withdraw his amendment in the hope that such measure of agreement might be arrived at.

The Bill was read a second time and committed to a Standing Committee.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 10TH.

Tuberculosis in the Navy.

Viscountess ASTOR asked the First Lord of the Admiralty the number of cases of tuberculosis in the Royal Navy as a whole for each year in the last ten years.—Mr. G. H. HALL replied: The numbers of cases of tuberculosis, pulmonary and non-pulmonary, in the Royal Navy as a whole for each year in the last nine years were as follows: 1921, 284; 1922, 224; 1923, 173; 1924, 204; 1925, 262; 1926, 222; 1927, 193; 1928, 188; 1929, 272. I regret that the figures for ten years are not available.

Poisoning of Sweets.

Mr. FREEMAN asked the Minister of Health whether his attention had been called to a number of recent cases of the poisoning of sweets, notably by arsenic; and whether he intended holding any inquiry into the matter.—Miss LAWRENCE replied: My right hon. friend is aware of the cases referred to, and he understands that the local authority concerned has taken suitable action, including the prosecution of the persons responsible. Officers of my department have kept in close touch with those of the local authority in the course of the investigations, and my right hon. friend does not think it necessary to hold any special inquiry into the matter. I may add that my right hon. friend is in consultation with the Secretary of State on the question of legislation to guard against the danger of the accidental misuse of poisons.

THURSDAY, DEC. 11TH.

Law of Sweepstakes and Lotteries.

Mr. DAY asked the Home Secretary whether, in view of the present condition of the law on the subject of sweepstakes, lotteries, and raffles, he would consider the appointment of a committee for the purpose of recommending legislation with a view to clarifying the position.—Mr. CLYNES replied: Under the existing law, public lotteries of whatever form and whether promoted in this country or not are illegal in this country, and while that is the case the authorities have no alternative but to carry out the law Under the Customs Acts, advertisements or notices of lotteries are contraband, and upon importation, by whatever means, can be dealt with accordingly. The sending of lottery tickets or advertisements through the post is also prohibited, and letters suspected of containing correspondence relating to lotteries may be opened. The Statute provides heavy penalties for breaches of the law. If I were satisfied of the existence of any general demand that I should look into the question of setting up a committee to consider, as a practical question, the conditions and safeguards which would be necessary and appropriate if lotteries were to be permitted as a method of raising money for approved public purposes, I should be prepared to consider what would be the best method of giving effect to such a demand.

The Sale of Arsenic.

Sir GEORGE PENNY asked the Home Secretary whether, in view of the opinion expressed by coroners, he would consider a revision of the regulations controlling the sale of arsenic to the public so that, if this poison was indispensable to agriculture, the licensed vendors, such as corn merchants, ironmongers, &c., would be made to comply with the same regulations as registered chemists.—Mr. CLYNES replied: I hope that a Bill for the purpose of simplifying and strengthening the law relating to poisons may shortly be introduced into Parliament. I would, however, remind the hon. Member that the existing provisions of the law relating to the sale of arsenic and of poisons generally apply equally to registered chemists and the licensed vendors to whom he refers. The licensed vendors are, in addition, subject to the regulations made by Order in Council under Section 2 of the Poisons and Pharmacy Act, 1908.

Medical Examination of School-children.

Dr. HASTINGS asked the President of the Board of Education the approximate time per capita taken in the medical examination of school-children.—Sir CHARLES TREVELYAN replied: When children are being examined at routine medical inspections, about six minutes is occupied on the average in the inspection of each child. Children discovered or suspected to be suffering from defects requiring more detailed investigation are referred for subsequent examination, and the time then given to any particular child, of course, varies with the nature of the defect.

Epidemic in the Meuse Valley.

Colonel HOWARD-BURY asked the Minister of Health whether, in view of the fact that 65 deaths had been caused in Belgium by sulphuric acid fumes and fog, he was taking steps to see that a similar result did not happen from a combination of fog and sulphuric acid fumes from the Battersea power station being erected in the heart of London.—Mr. GREENWOOD replied: The Belgian Ministry of the Interior have instituted an official inquiry into this matter, and I have asked to be favoured with a copy of the report. Until the facts are ascertained, I know no grounds for assuming that sulphuric acid or any other fumes are associated with the cause of the outbreak, but, as regards the Battersea power station, I would draw attention to the report presented to Parliament last month by the Minister of Transport in which it is stated that the committee presided over by the Government chemist are satisfied that it is practicable to instal there a plant which will reduce the emission of sulphur fumes to a negligible quantity.

MONDAY, DEC. 15TH.

Male Nurses in Mental Institutions.

Mr. DAY asked the Minister of Pensions the number of the male nursing staff employed in the institutions under his control dealing in cases of mental and severe nervous disorder who had not the qualifications of a certificate for dealing with such cases.—Mr. J. A. PARKINSON (Lord of the Treasury) replied: There are some 165 orderlies employed in the institutions under the control of the Department which provide treatment for mental and severe nervous affections. Of these 33 are in possession of a certificate. The bulk of the remainder have, however, had ten years' experience and upwards in mental institutions. It may be pointed out that a majority of the patients in the institutions referred to are not certified cases.

English Tests of Spahlinger Vaccine.

Mr. HURD asked the Minister of Agriculture whether his attention had been called to the tests by an expert and impartial committee in Norfolk of the Spahlinger vaccine as a preventive against bovine tuberculosis; and whether his department was making further inquiries.—Dr. ADDISON replied: Captain Richard Buxton has been good enough to present me with a summary of the report of the interesting experiments with M. Spahlinger's vaccine which have been carried out on his farm in Norfolk. I have suggested to him, in the interest of all concerned in the problem, that he should arrange for a complete test to be made by and under the

independent control of recognised authorities who are experienced in research in this disease.

War Pensioners' Claims.

Brigadier-General MAKINS asked the Minister of Pensions the total number of claims submitted outside the seven years' limit up to Nov. 30th, 1930, since his announcement in regard to this matter in November, 1929; how many of these applications had been considered and dealt with; and how many of them had received favourable consideration.—Mr. PARKINSON replied: Some 20,300 fresh claims have been submitted during the period referred to, of which rather more than 18,000 have been considered. In 982 cases the claims have been recognised either by way of medical or surgical treatment, or by some form of pecuniary compensation.

Independent Medical Authority and Pension Claims.

Mr. STEPHEN asked the Minister of Pensions in how many disputed cases there had been reference to an independent medical authority, in accordance with the new arrangements made since he took office.—Mr. PARKINSON replied: The number of such cases up to the end of last month was 251.

Advertisements of Hall's Wine.

Dr. HASTINGS asked the Postmaster-General whether his attention had been called to the fact that advertisements for Hall's wine were contained in books of stamps sold at post offices; whether, in view of the fact that this wine contained a large percentage of alcohol and could only be retailed by those holding a licence, and that it was without medicinal value because the small quantity of meat juice that it contained was rendered inert by the action of the alcohol in it, he would take steps to see that such advertisements were no longer accepted.—Mr. LEES-SMITH replied: In accordance with the Government's general decision, no advertisement of alcoholic liquor is now accepted for inclusion in post office books of stamps; and this decision applies to advertisements of Hall's wine. Any such advertisements appearing in stamp books now on sale represent issues printed before the decision took effect.

Shell Shock and War Neurasthenia.

Mr. PRICE asked the Minister of Pensions how many persons suffering from shell shock and war neurasthenia were in receipt of pensions at the present time; and whether, in view of the ill-effect on general health of worry on the minds of these persons as to the certainty of their pensions continuing, he would consider making these pensions permanent.—Mr. ROBERTS replied: The total number of officers and men at present in receipt of pension on account of neurasthenia is about 32,000. It is the policy of the Ministry to make final awards in all suitable cases, and, as a matter of fact, in 28,000 of the total number of cases referred to the awards have been made permanent.

War Pensioners and Attributability.

Dr. MORRIS-JONES asked the Minister of Pensions if he was aware that in certain cases pensioners who had been given the entitlement of attributability for their pensionable conditions were dealt with on an aggravation basis, although notified as attributable, and were thus deprived of their right of appeal to the pensions appeal tribunal on entitlement; and whether he would inquire into the matter.—Mr. ROBERTS replied: In no case is any change of entitlement affecting pension made, which could form the subject of appeal, without such right of appeal being given.

TUESDAY, DEC. 16TH.

Vivisection Experiments.

Lieut.-Commander KENWORTHY asked leave to introduce a Bill to prevent the application of public money to vivisection experiments.

Major CHURCH opposed the Bill.

Leave to introduce the Bill was refused by 170 votes to 156—majority against, 14.

Scottish Prisoners and Insanity.

Mr. STEPHEN asked the Secretary for Scotland whether he proposed to take any steps to deal with the position of persons charged with an offence, but incapable of pleading through insanity, who had afterwards recovered and been sane for years.—Mr. ADAMSON replied: According to existing practice the cases of individual inmates of the Criminal Lunatic Department are considered periodically. In consultation with my right hon. friend, the Lord Advocate, I am examining the existing procedure with a view to ascertaining whether any modification of it is desirable.

Mortality and Sickness among Seamen.

Mr. THOMAS LEWIS asked the President of the Board of Trade whether, in view of the mortality and sickness experienced amongst seamen, he intended, at an early date, to take steps to secure an improvement in the accommodation provided for the crews of the mercantile marine.—Mr. W. GRAHAM replied: An investigation is being made to determine what are the true death- and sickness-rates amongst seamen as compared with other occupations. The accommodation on board ship, which is frequently inspected by the surveyors of the Board of Trade and by the local health authorities, has recently been engaging the special attention of the Board of Trade, of the Joint Committee of the Board of Trade and Ministry of Health, and of the Shipping Federation. I hope that agreed proposals improving the general standard of crew accommodation will result from these inquiries.

Radium Supplies.

Commander BELLAIRS asked the Minister of Health, in view of the undertaking of the last Government to refer the question of radium supplies and prices to the League of Nations, what progress had been achieved; and whether the League had inquired into both the prices and supplies from the Union Minière in Belgian territory.—Mr. GREENWOOD replied: I am not aware that any undertaking such as is suggested by the hon. and gallant Member was given, but I am informed that proposals for investigation of these matters were made at the last session of the Health Committee of the League of Nations, and will be further considered at the next meeting of that Committee.

MEDICAL NEWS

Royal College of Surgeons of England.

A meeting of the Council of the College was held on Dec. 11th, with Lord Moynihan, the President, in the chair.

Mr. Russell Howard (Surgeon to the London Hospital) was re-elected, and Mr. E. C. Hughes (Assistant Surgeon to Guy's Hospital) and Mr. L. E. C. Norbury (Surgeon to the Royal Free Hospital) were elected Members of the Court of Examiners.

Diplomas of Membership were granted to Marjorie Low (Royal Free); Marjorie N. Lunn (Royal Free); E. Mary Newham (Royal Free); and David Ockman (Manchester).

The Fellowship of the College was conferred on the following:—

Gladys Maud Sandes, Royal Free; John Maxwell Clarke, Otago and St. Bart.'s; Walter Graham Scott Brown, St. Bart.'s; Annie Pichaimuthu, Madras; James Harold Saint, Durham and London; Reginald Cyril Tatham, Middlesex; Norman William Bolton, Manchester; James Cecil Hogg, Cambridge and St. Bart.'s; Walter Stanley Chapman, Univ. Coll.; Ralph Marnham, Cambridge and St. George's; Basil Roy Sworn and Richard Hood Metcalfe, St. Thomas's; Derek Gordon Bown, Guy's; Frederick Herman Aitken Walker, Cambridge and St. Bart.'s; Abdulla Ali, Cairo and London; Prem Nihar Ray, Calcutta and St. Bart.'s; Robin Sturtevant Pilcher, Univ. Coll.; Wilfred Hynes, Leeds and St. Bart.'s; Judson Tynedale Chesterman, Bristol and Guy's; Max Roslyn Ernst, St. Bart.'s; Eric Newton Wardle, Liverpool and London; Hussein Yousri, Birmingham and King's Coll.; Motibhai Desaibhai Patel, Guy's and London; John Roydon Peacock, Cambridge and St. George's; Philip Joseph Ganner, Birmingham and London; Norman Rupert Barrett, St. Thomas's; Alfred Charles Fisher, Bristol and Guy's; William Eldon Tucker, Cambridge and St. George's; Harold Strang Taylor-Young, Cambridge and St. Thomas's; Cecil Edwin Corrigan, Manitoba and St. Bart.'s; Alan Doyle Everett, St. Bart.'s; Frank Wild Holdsworth, Cambridge and St. George's; Raymond Purvis, St. Thomas's; Terence John Millin, Dublin and Guy's; Frederick Ross Stansfield, Leeds and St. Bart.'s; Francis Florence D'Arcy, Melbourne and Guy's; Sydney Gordon Davidson, Aberdeen and Guy's; David Imrie Fitzpatrick, Melbourne and Guy's; Edward Charles Bell Jones, Melbourne and London; James Fong Kemble, Sydney, Guy's and St. Bart.'s; Kenneth Lumsden, Edinburgh and St. Bart.'s; Edward Gerard MacMahon and Norman St. Clair Mulhearn, Sydney and Guy's; Lloyd Reath Olver, Sydney and St. Bart.'s; Kenneth Charles Trineman Rawle, Sydney and Guy's; Cecil Ashley Marshal Renou, Melbourne; Vithal Nagesh Shirodkar, Bombay and Guy's; George Robin Adlington Syme, Melbourne and Guy's; Jacob Taliat, Bombay and London; and Samuel Aird McCleery Thompson, Belfast and London.

Three other candidates were successful in the recent examination, but have not yet complied with the regulations—namely, Alfred Richard Denis Pattison, Kenneth Hampden Pridie, and Israel Preiskel.

The Licence in Dental Surgery was granted to Pondichery Somasunder, M.R.C.S. (Madras and London).

At the request of the Canadian Medical Association it was

decided to hold a primary examination for the Fellowship in Canada in 1931.

At the primary examination for the Fellowship, held from Dec. 2nd to 13th, 178 candidates presented themselves, of whom 57 were approved. The following are the names and medical schools of the successful candidates:—

S. C. Alagappan, M.B., Madras Univ. and Middlesex; A. V. Baliga, L.C.P.S., Bombay, King's Coll., and Middlesex; F. H. Bentley, M.B., Manchester; A. Birnbaum, London; G. W. Black, M.B., Middlesex; H. A. Body, M.D., Melbourne and Middlesex; S. G. Browne, King's Coll.; M. Bryer, M.R.C.S., St. Bart.'s and Middlesex; E. L. Button, M.B., Otago and St. Mary's; E. G. L. Bywaters, Middlesex; F. A. d'Abreu, M.B., Birmingham, St. Mary's, and Middlesex; D. O. Davies, St. Bart.'s; G. Y. Feggetter, M.B., Durham; S. Y. Feggetter, Durham; G. S. Ferraby, M.B., King's Coll. and St. Mary's; W. C. Gissane, M.B., Sydney Univ.; J. Grocott, Guy's; J. D. Hay, Cambridge; F. J. Hector, M.R.C.S., Bristol and Middlesex; J. C. R. Hindenach, M.B., Otago and Middlesex; F. K. S. Hirschfeld, M.R.C.S., Melbourne, Oxford, and London; Eva Ho-Tung, M.B., Hong-Kong and King's Coll.; W. E. A. Hughes-Jones, M.B., Melbourne Univ.; Muriel S. Hulke, M.B., Univ. Coll.; E. A. Hunt, M.B., Toronto Univ.; J. Kelley, M.B., Cork; H. B. Lee, St. Bart.'s; G. J. Lillie, M.B., Melbourne and King's Coll.; E. W. Lindeck, M.B., Camb. and Univ. Coll.; W. S. McKenzie, Camb. and Middlesex; R. J. W. Malcolm, M.B., Sydney and Middlesex; G. S. Malik, M.B., Univ. Coll.; B. R. Medlycott, M.B., Guy's; T. W. Mimpriss, M.R.C.S., St. Thomas's; W. F. Nicholson, Camb. and Middlesex; J. A. R. O'Regan, M.B., Otago Univ.; R. C. Percival, Sydney and London; K. M. A. Perry, Camb. and London; H. A. Phillips, M.D., Melbourne and Middlesex; A. K. Price, St. Thomas's; R. B. Pringle, M.R.C.S., Camb. and St. Thomas's; R. W. Raven, M.R.C.S., St. Bart.'s; R. K. Reeves, M.B., Adelaide and London; L. C. Rogers, M.R.C.S., Middlesex; L. S. Rogers, M.B., Otago and St. Mary's; G. F. Rowbotham, M.R.C.S., Manchester and Middlesex; B. W. Rycroft, M.D., St. Andrews and Middlesex; R. Shackman, St. Bart.'s; M. Silverstone, M.B., Liverpool Univ.; C. G. Sinclair, M.B., St. Bart.'s; V. A. J. Swain, St. Bart.'s; S. M. Thompson, Camb. and King's Coll.; T. M. Tyrrell, Camb. and St. Thomas's; F. Welsh, M.B., Birmingham Univ.; W. K. Welsh, Toronto Univ.; I. G. Williams, Middlesex; and H. R. I. Wolfe, St. Thomas's.

University of London.

At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B., B.S.

Honours.—M. P. Ellis (*a*), Univ. Coll. Hosp.; R. A. Fitzsimons (*d*), Charing Cross Hosp.; Beatrice M. Joly (*a*), L.S.M.W.; G. L. Jones (*c*), St. Thomas's Hosp.; Michael Kremer (*a*), Middlesex Hosp.; D. W. C. Northfield (*d*, *e*, *University Medal*), Guy's Hosp.; and A. W. M. Rooke, Univ. Coll. Hosp.

(*a*) Distinguished in Medicine. (*d*) Distinguished in Surgery.
(*c*) Distinguished in Forensic Medicine.
(*e*) Distinguished in Midwifery.

Pass.—E. F. Barnardo, London Hosp.; F. G. L. Barnes St. Bart.'s Hosp.; Jamshed Nusserwanji Bhada, Univ. Coll. Hosp.; W. L. M. Bigby, Guy's Hosp.; J. G. Bowen, London Hosp.; W. E. R. Branch, Univ. Coll. Hosp.; Dora E. Brockbank, L.S.M.W.; F. E. Camps, Guy's Hosp.; W. H. P. Cant, Univ. of Birmingham; A. G. Carmichael, Middlesex Hosp.; Rosa E. Chamings, L.S.M.W.; Arnold Clark and E. E. Claxton, St. Bart.'s Hosp.; F. S. Cliff, Univ. Coll. Hosp.; W. D. Coltart, St. Bart.'s Hosp.; T. V. Cooper, Westminster Hosp.; Catherine B. Crane, L.S.M.W.; H. J. Croot, Guy's Hosp.; Marian J. Cunning and Catherine Day, L.S.M.W.; C. E. Dolman, St. Mary's Hosp.; D. G. Evans, Univ. Coll., Cardiff, and Univ. Coll. Hosp.; J. D. S. Flew, Univ. Coll. Hosp.; Beryl M. Furlong, Kamala Ghosh, Olive N. Grant, and Mary W. Hamlyn, L.S.M.W.; Flora Hargreaves, Univ. Coll. Hosp.; Lettice P. Harrison, L.S.M.W.; K. W. D. Hartley, St. Bart.'s Hosp.; Honor E. C. Harvey, L.S.M.W.; A. S. Hatch and Katherine M. Heberlet, Univ. Coll. Hosp.; P. Y. Hicks, St. Thomas's Hosp.; R. E. Holmes, London Hosp.; E. B. Jackson, Univ. Coll. Hosp.; H. B. Jackson, Middlesex Hosp.; E. K. Jones, London Hosp.; J. L. F. King and G. C. Knight, St. Barts.' Hosp.; H. J. Knight, St. Mary's Hosp.; Nellie I. Lanckenau and L. J. M. Laurent, Univ. Coll. Hosp.; I. W. Lazarus, London Hosp.; Arthur Levy, St. Thomas's Hosp.; Annie M. McGrath, Westminster Hosp.; Joyce MacInnes, L.S.M.W.; A. H. MacG. McMullan, Univ. of Birmingham; Moyra I. Macnaughton-Jones, L.S.M.W.; Eileen M. Massey, King's Coll. Hosp.; Elizabeth T. Mess, L.S.M.W.; J. R. Murray, London Hosp.; A. M. Nussbrecher, Middlesex Hosp.; R. A. C. Rice, R. S. Risk, and A. H. T. Robb-Smith, St. Bart.'s Hosp.; C. P. Scott, St. Thomas's Hosp.; Violet R. Sharp and Dorothy A. Sharpe, L.S.M.W.; N. L. Shepperd, King's Coll. Hosp.; Everell M. Shippam, L.S.M.W.; C. K. Simpson, Guy's Hosp.; Effie Slater, Univ. of Leeds; Douglas Stanley-Jones, St. Bart.'s Hosp.; H. H. Steadman and F. H. Stevenson, Guy's Hosp.; T. S. Stone, London Hosp.; E. G. Thomas, Univ. Coll., Cardiff, and Univ. Coll. Hosp.; C. J. L. Thurgar, Univ. Coll. Hosp.; E. S. Vergette, St. Bart.'s Hosp.; J. C. S. Wells and A. S. Wigfield, Univ. Coll. Hosp.; E. R. Williams, St. Mary's Hosp.; Maureen D. Willmott Evans, L.S.M.W.; and T. H. Wilson, St. Thomas's Hosp.

L.S.M.W. = London School of Medicine for Women.

University of Manchester.

At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR M.B. AND CH.B.

A. N. Birkett, B. R. Bramwell, S. T. Cowan, C. G. Eastwood, J. R. P. Edkins, Dorothy A. Geiler, E. W. Hardman, Leslie Jones David Ockman, H. J. O'Loughlin, B. P. Robinson, and G. H. C. Walmsley.

Part I. (*Forensic Medicine*, &c.)—C. B. Ainscow, G. H. M. Franklin, J. K. Hadfield, J. F. E. Johnson, and E. D. Portman.

DIPLOMA IN DENTISTRY.

Edward Entwisle, J. B. Hoyles, Lawrence Moran, and Minnie H. Platford.

Royal Institution.

The Royal Institution has received an intimation from the Pilgrim Trust that under the terms of the gift of £2,000,000 to Great Britain by Mr. Edward S. Harkness, the trustees have allocated £16,000 to meet the deficiency on the fund for the reconstruction of the Institution.

The 105th course of Christmas lectures "adapted to a juvenile auditory" will be given by Prof. A. M. Tyndall at 3 P.M. on Dec. 30th and Jan. 1st, 3rd, 6th, 8th, and 10th. His subject will be the Electric Spark, and tickets (one guinea; juveniles, 10–16, half-price) are obtainable at the Institution, 21, Albemarle-street, London, W.1.

Appointments at the Ministry of Health.

The Minister of Health has appointed Sir Ernest Strohmenger to be Deputy Secretary to the Ministry of Health, in succession to Mr. E. R. Forber, and Mr. S. H. G. Hughes to be Principal Assistant Secretary for Finance and Accountant-General of the Ministry.

Lectures on Tropical Hygiene.

A series of eight lectures and demonstrations on tropical hygiene, which are intended for men and women outside the medical profession proceeding to the tropics, will be given at the London School of Hygiene and Tropical Medicine, by Lieut.-Colonel G. E. F. Stammers, from Jan. 14th to 23rd, at 2 P.M. A second series of lectures will be given from March 18th to 27th at 5 o'clock. Syllabuses and full particulars may be had from the Secretary of the School, Keppel-street, W.C. 1.

Voluntary Health and Pensions Insurance.

Dec. 31st is the latest date for taking up voluntary health insurance in the case of certain persons in "excepted employment." Those affected are railway clerks, municipal employees, and others, who have been paying contributions compulsorily for pensions (but not health insurance) since Jan. 2nd, 1930, or earlier, and who are given an opportunity by the Pensions Act of 1929 of becoming voluntary contributors for health insurance benefits as well as for pensions. Any person in this class who wishes to take advantage of the opportunity offered should therefore write at once to an approved society or to the Ministry of Health, Whitehall, London, S.W.

Research Fellowships in Tuberculosis.

The Medical Research Council announce that they have awarded three Dorothy Temple Cross Research Fellowships for 1930–31 to Arthur Ivan Granville McLaughlin, M.B., late Chief Assistant in the Tuberculosis Department of St. Thomas's Hospital; Reginald John Matthews, M.D., Chief Tuberculosis Officer of the Mid-Glamorgan area and Medical Superintendent of Cymla Hospital; and Lieut. Sidney Malcolm Burrows, R.A.M.C., attached to the Sudan Defence Force. Dr. McLaughlin has received a Fellowship for the study of methods of diagnosis and treatment at some chosen centre in the United States. Dr. Matthews and Lieutenant Burrows have received Senior Fellowships, and will make special studies of problems of tuberculosis among the native populations in Zanzibar and in the Bahr-el-Ghazal province of the Sudan, under arrangements made by the Council with the respective Governments. These are the first appointments to be made under the terms of the Dorothy Temple Cross benefaction.

Medico-Legal Society.

The annual dinner of this society was held on Dec. 12th at the Holborn Restaurant. The chair was taken by Earl Russell, past president, in the absence of the president, Lord Riddell, through illness. The toast of "Medicine and Law" was proposed by Sir William Willcox, who said that the two professions had much in common, both demanding great self-sacrifice and being very jealous mistresses. Medicine, however, was an ever-changing profession, depending on scientific knowledge, while law moved slowly and depended largely on precedent. Doctors and laymen were apt to be puzzled by the lawyer's behaviour as an advocate, and doctors were simple and honest people who could be turned inside out in the witness-box. Dr. R. A. Young, replying, welcomed the opportunity of addressing lawyers without the risk of that awful form of vivisection—cross-examination. Recently both law and medicine had been accused by the headmaster of Harrow of being accurate

professions; this was certainly a libel on medicine, for no biological study could be accurate. À propos of a lady who had said to him, "It is no fun being married to a doctor; you have neither a doctor nor a husband," he told the story of the famous physician who had warned his students of the dangers of antipyretic drugs by describing how his wife had once taken an overdose, and how he had returned home to find her collapsed, blue, clammy, and almost pulseless. Unfortunately, an inquisitive student had one day asked: "What steps did you take, sir?" "Steps?" the physician had replied, "I took no steps; she was not my patient." There were three things, Dr. Young concluded, on which medicine and law would never agree: the signs of intoxication, the criteria of insanity, and the demand of the doctors for professional privilege. Sir Thomas Hughes, replying for the law, protested that members of the Bar were the gentlest creatures in the world. Referring to Mr. Justice McCardie's recent remarks on perjury, he said that the learned judge was somewhat given to exaggeration, and his view must be accepted with caution. Making allowances for the great temptation to a prisoner giving evidence on his own behalf, perjury was not such a serious matter as Sir Henry McCardie had alleged. Mr. E. H. Tindal Atkinson, proposing the health of the society, described his experiences as a referee under the National Health Insurance Act, which had led him into some curious by-ways. He had learned that Richter's hernia had nothing to do with the great conductor, and that parkinsonian signs were not so agricultural as they sounded. He deplored the Latin and Greek phraseology which obscured medical reports; he had a feeling that the word "cæcal" had something to do with "hiding," and when he encountered it in a report he always wondered whether the writer really was concealing something. Witnesses were always ready with a theory of who was to blame, and he turned with relief to the medical reports, where he found fact and absolute impartiality. While doctors in this country continued to give evidence in this way there was little likelihood of a jury returning a verdict like that of the Irish tribunal which had said that the deceased had undoubtedly committed suicide, but added as a rider that they thought his end had been hastened by the post-mortem examination. Earl Russell, replying, said that the membership of the society had now passed 400. He did not think law and medicine had very much in common, but they both sought the truth. The desire of the doctor to tell the exact and simple truth was sometimes what made him so annoying to the lawyer who called him as a witness. Contesting Sir William Willcox's suggestion that law had ossified in its shell, he cited the many recent revolutionary Acts of Parliament passed by lawyers, particularly the Property Acts of 1925. Sir Albion Richardson proposed "The Guests," and Sir Alfred Tobin and Lieut.-Colonel C. T. Samman replied.

The Old Epsomian Club.

The annual dinner of the Old Epsomian Club was held at the Hotel Great Central, London, on Thursday, Dec. 11th, when Dr. L. L. C. Reynolds presided over a large company of members and guests. After the loyal toasts, the health of the president was proposed by Mr. A. C. C. Parkinson, who commented upon Dr. Reynolds's fine record at Epsom, when, he said, the early interest which he took in the school rifle corps foreshadowed the admirable record which he secured in the Great War; for he was mentioned in despatches five times, decorated by the French and Italian Governments, and obtained also the D.S.O. with bar. Dr. Reynolds in his reply took up none of the allusions to his military career, but briefly stated how he viewed the development of the school since his boyhood, with its material extensions and the accumulation of a valuable tradition. He was here speaking to the second toast "Floreat Epsomia," of which he was the proposer, when the headmaster, Mr. A. C. Powell, responded by telling, with details, the creditable performances of the school during the past year in classroom and playing field. He made particular allusion to the construction of the new sanatorium, now in the building, and designed to be a model of what a public school sanatorium should be. The toast of the Guests was proposed by Mr. George Neligan, who coupled with it the names of Viscount Burnham (the President of the College) and Lord Dawson of Penn. Lord Burnham declared his gratification in succeeding to the office of President such men as Lord Granville and Lord Rosebery, the latter of whom was a dear friend of his own. Lord Dawson, who began in light vein with several amusing stories, went on to address members of the medical profession present, warning them to be ready for social developments which were bound to ensue, and which would lead to situations when doctors would find it not only necessary but their duty to get into far closer relations with the public. The dinner was felt by all present to have been an enjoyable one.

Appointments

BAILEY, H., F.R.C.S. Eng., has been appointed Surgeon, Royal Northern Hospital, London.

LAMONT, D. C., M.B., Ch.B. Edin., D.P.H., Medical Officer of Health for Burnley.

MULCAHY, AILEEN M., L.R.C.P.I., L.R.C.S.I., D.P.H., Temporary Asst. Medical Officer of Health, Galway.

Certifying Surgeons under the Factory and Workshop Acts: HAY, W. K., M.B., B.Ch. Belf. (Market Drayton); RITCHIE, H. N. (Hoyland Nether, West Riding).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. Surg. to Dental Department.
Accrington Victoria Hospital.—H.S. £150.
Birmingham General Hospital.—Two Res. Surg. Registrars. Each £100. Res. Anæsthetist. £120. Also H.P., and Two H.S.'s. Each £70.
Bradford Royal Infirmary.—Hon. Surg. Also Hon. Asst. Surg.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Bristol General Hospital.—H.P.'s, H.S.'s, Res. Obstet. O. Each at rate of £80. Also Cas. H.S. At rate of £100.
Bristol, Hortham Colony for Mental Defectives.—Med. Supt. £700.
Burnley, Victoria Hospital.—Two H.S.'s. Each at rate of £150.
Bury St. Edmunds, West Suffolk General Hospital.—Jun. Res. M.O. £150.
Cardiff Royal Infirmary.—Two Hon. Asst. Surgeons.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S. £120 and £100 respectively.
Chesterfield and North Derbyshire Royal Hospital.—H.S.'s. All at rate of £100–£175.
Derby County Mental Hospital, Mickleover.—Jun. Asst. M.O. £350.
Durham County Hospital.—Two H.S.'s. Each £150.
Hertford County Hospital.—Hon. Asst. Surg. Also H.P. At rate of £150.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, St. John's Wood, N.W.—Gynæc. Surg. Also Radiologist.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Asst. S.
Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150.
Hull Royal Infirmary, Sutton Branch.—H.P. At rate of £160.
Hull Royal Infirmary.—2nd H.S., 3rd H.S. And H.S. to Ophth., &c. Depts. Each at rate of £150. Also Cas. H.S. At rate of £130.
Indian Medical Service.—Commissions.
Inverness, Royal Northern Infirmary.—H.P. At rate of £100.
Leamington Spa, Warneford General Hospital.—Res. H.P. and H.S. Each £165.
Leeds City Sanatorium, Killingbeck.—Med. Supt. £850.
Leicester Royal Infirmary.—Hon. Physician. Hon. Asst. Physician. Also Res. H.P. At rate of £125.
Liverpool Royal Infirmary.—Hon. Surgeon to Lock Dept.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.
Manchester Royal Infirmary.—Asst. Surg. Officer to Gynæcological Dept. £35.
Manchester Royal Infirmary, Central Branch, Roby-street.—H.S. £100.
Margaret-street Hospital for Consumption, 26, Margaret-street, W.—Hon. Asst. Physician.
National Hospital, Queen-square.—Hon. Surg. Asst. Also Hon. Asst. Surg.
Nottingham General Hospital.—H.S. At rate of £150.
Poplar Hospital for Accidents, East India Dock-road, E.—Sen. Res. O., &c. £200 plus £75.
Preston, Sharoe Green Hospital, Fulwood.—Jun. Res. M.O. At rate of £104.
Prince of Wales's General Hospital, N.—Asst. Pathologist. £200.
Rochester, St. Bartholomew's Hospital.—H.P. At rate of £175.
St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, City-road, E.C.—H.S. At rate of £75.
St. Mary's Hospital, W.—2nd Asst. Pathologist. £250.
Salford Royal Hospital.—Cas. H.S. At rate of £125.
Sheffield, Jessop Hospital for Women.—Three Asst. H.S.'s. Each at rate of £100.
Sheffield Royal Infirmary.—H.P., H.S., Asst. Aural and Ophth. H.S. Also Asst. Cas. O. All at rate of £80.
Sheffield, Winter Street Hospital.—Asst. Tuber. O. £350.
*Southampton, Royal South Hants and Southampton Hospital.**—Sen. H.S. £225. Also H.P., and Two Asst. H.S.'s. Each at rate of £180.
Southgate Urban District Council.—M.O.H., &c. £800.
Swansea County Borough.—Asst. M.O. £600.
Swansea General and Eye Hospital.—H.P. £150.
Swansea Hospital.—Sen. Res. O. £300.
Walsall General Hospital.—H.S. At rate of £150.
Warwick, King Edward VII. Memorial Sanatorium, Hertford Hill.—Sen. Asst. M.O. £275.
Weston-super-Mare General Hospital.—Res. H.S. At rate of £150.
Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £150.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Cranbrook (Kent).

* The salary for the post of House Physician to the Royal South Hants and Southampton Hospital, which is £180 per annum, was given in error in our advertisement columns last week as £120. The correct salary was, however, noted in this column.

NOTES, COMMENTS, AND ABSTRACTS

THE FUTURE OF THE MEDICAL CURRICULUM.*

BY LINDSEY W. BATTEN, M.B. CAMB., M.R.C.P. LOND.,
ASSISTANT PHYSICIAN TO THE EAST LONDON HOSPITAL, SHADWELL.

WHAT, precisely, is intended to be the end-product of the medical curriculum?

There are two possible answers. It may purpose to train men for the practice of medicine, its end-product being men and women ready to practise. Or it may profess no more than to teach the principles of our art, to teach medicine and surgery in the abstract as provinces of knowledge; so that if some young practitioner, finding deficiencies in his armament, rounded on the curriculum, like Omar's pots on the Potter, and endeavoured to call that august being to account, the Curriculum might reply: "I never promised to make a practitioner of you, you have learned the science and theory of medicine, apprentice yourself to a practitioner of experience and he will teach you the art." If this position is in fact tenable, much of what I have to say falls to the ground; but in these days of a training period six years long or more, and of a curriculum which includes, besides other practical clinical work, the giving of anæsthetics and the actual conduct of labour, it cannot, I think, be seriously contended that the purpose of our education is other than to prepare us for practice.

I think too—though this is perhaps debatable—that the ordinary standard product of the works must be intended to be general and not special practitioners. Later on, no doubt, modifications may be made in the body and fittings even to the extent of removing it from the chassis and substituting a brand new body of some highly specialised kind. It is right, too, that the workshops should be able on occasion to build what the jargon of the day would call "super-models" for international contests. But to drop the metaphor, no one will seriously contend that it is the chief or the most important business of medical schools to turn out specialists and eminent consultants; their chief business is to turn out good doctors. If this argument is sound we may reasonably and pertinently ask how far the training we received has, in fact, fitted us for practice. Did we enter practice so well equipped that only those things which it belongs to experience to teach were lacking? Did we find that our equipment, though good in patches, was inexplicably incomplete in some respects and in others complicated and cumbersome, including a six-inch howitzer in place of a rifle and a mechanical concrete mixer instead of a spade? Or have we had so much to learn and to unlearn that we would like to grasp this sorry scheme of things entire, to shatter it to bits, and then remould it nearer to our heart's desire?

Few of us, I imagine, would run to this last extreme. If we believe ourselves competent we must in fairness give credit both to our teachers and our teaching. There are no "self-taught" in our profession, and each of us, I suppose, daily recalls with gratitude some at least of those who laboured to instruct him and would gladly remember more of what they taught.

Furthermore it was all extremely enjoyable. I suppose it is common for young men to enter any skilled trade or profession more because the learning of it looks attractive and holds a promise of initiation into mysteries than because he clearly sees himself earning his living in its practice. Ask any elementary schoolboy what he would like to be and, if he answers at all, he will invariably reply "an electrical engineer." He means that he would like to be a powerful magician. The same ambition, coupled very often with a laudable desire to follow in father's footsteps, urges, lures, or gently wafts the erstwhile schoolboy on to the road that leads to medical practice. He enters on his studies with zest and enjoys them. Whether he ever looks further ahead than the date of the next examination may be doubted, and it must be confessed, I think, that he is very seldom invited to do so. I cannot help thinking that, at least in the last two or three years of the course, he might, with advantage, be urged to take a longer view. Be that as it may, there is no doubt that for the present he enjoys being a medical student and uncritically accepts the curriculum as he finds it.

The Student's Progress.

Elementary chemistry and physics are not very exciting, but can be learnt after a fashion with no great effort and still more easily forgotten.

The course in biology, on the other hand, stimulates thought and imagination, and one would like to know what master hand devised it. However much its details may be forgotten it leaves in the mind an enduring sense of the unity of Nature, of the reality of evolution and of man's kinship with other living things. Somewhere between the dog-fish and the rabbit the young man feels that now indeed he is initiated into the mysteries and is an entered apprentice to medicine.

Anatomy attracts the mind as a difficult but still possible memorising feat, presenting also opportunities for craftsmanship to the dexterous; but even its surgical applications are hardly for a moment considered, its medical applications never; nor, in my experience, is it ever suggested to the anatomy student that an occasional visit to the post-mortem room would help to correct and vivify the desiccated and somewhat distorted simulacrum of the human body presented to him in the dissecting room, and would help to preserve his sense of proportion, at a time when it needs all the help it can get.

Physiology, like biology, is, or should be, an inspiring subject. Here is a living science, moving, advancing with strides. The frontiers of knowledge with explorers at work on them are reached in a day's journey from the base; it becomes apparent that research—at least for one with inexhaustible patience and an assured private income—must be an enthralling occupation, and to play at being a physiologist while time serves is pleasant enough. How ingenious are the theories of colour-vision! With what cunning have the experimenters endeavoured to solve the riddle of the renal tubules! How intricate is the minute anatomy of the central nervous system, and what an intellectual feat to visualise it and commit it to memory (though it seems odd that this province of anatomy should be called physiology)! Clearly we shall be very clever doctors when we know all this, cleverer much than the generation who preceded us, whom we begin now to suspect of being seriously handicapped by their ignorance of the latest laboratory work on the rabbit and the dog. True, most of what we learn applies immediately to the smaller quadrupeds, and we hear little, or at any rate much less, about the workings of intact human beings, but perhaps they are only large-scale guinea-pigs, or perhaps we shall come to that; anyway there is quite enough to learn as it is, what with thrombin and thrombokinase, creatine and creatinine, bilirubin and urobilin, tyramine and tryptophane, the visual purple, and the deep connexions of the red nucleus.

Filled to the brim or over, stuffed (I am impelled to say) with facts anatomical and physiological, the young man enters the surgery and the wards. Very

* Based on an address from the chair at a meeting of the Hampstead Division of the British Medical Association on Oct. 9th.

refreshing and stimulating it is to stitch up cut heads without inquiring what makes the blood to clot, very inspiring to find oneself actually in some degree responsible for the treatment of real flesh-and-blood patients. It is a glorious moment, but shadows of the prison house begin to close. Bacteriology, histology, biochemistry, pharmacology, even helminthology rise up like the thorn-trees before the sleeping beauty's prince, until medicine is obscured by its subsidiary sciences and the patient concealed behind the supposed reality of his disease. Apart, too, from the time spent on subsidiary sciences, that spent actually in clinical study is rather curiously apportioned; but of this more hereafter.

Attainments of the Graduate.

Behold at last our young man qualified. He has satisfied the examiners in the preliminary sciences, he has diligently attended the practice of the various departments of a hospital, he has conducted sundry labours, he has satisfied more examiners, and he is, say, six years older than he was when he began his studies. Let us give him one more year to hold a house appointment (for his father's purse is almost empty), and let us then take stock of the situation. How far is he now fitted to become a good general practitioner?

He has made a fairly serious study of two sciences—anatomy and physiology—and has dabbled in at least eight others (it would be easy to increase the number by meticulous subdivision). An almost incredible number of facts more or less related to medicine and surgery have been loaded on to his long-suffering memory and carried by it for a longer or shorter distance. He has known in what form manganese occurs in nature and how sulphuric acid is manufactured; likely enough he has had by heart the atomic weights of the elements. He has known the branches of the internal maxillary artery ("try my superior ink made to prevent blots, &c."), the components of the otic ganglion, and the relation of the structures passing through the sphenoidal fissure ("four fat ladies sitting nipping inferior sherry wine"). He has known the spectrum of methæmoglobin, which organisms liquefy gelatin, and whether *Bacillus paratyphosus* B. forms acid and gas in mannite. He has known the details of Chopart's amputation, and has been able to identify a Murphy's button in the examination in surgical morbid anatomy. He has spent an enormous amount of time getting these and hundreds of other facts by heart against the day when the examiner should cry "stand and deliver." Fortunately, as some may think, he does indeed empty the saddle-bags, which else would be quite intolerably cumbersome and heavy. He turns the stuff out of them as readily as once he lightened himself of the Latin genders and the Greek irregular verbs, and travels on with hardly more of permanent luggage than at the outset of the course. But the time spent in loading up and the labour spent in carrying this unnecessary burden of unsorted facts no one can give him again.

Fortunately he has learnt much beside facts. He has learnt the methods of experimental science, the nature of scientific evidence, and the necessity for controls. He has learnt (we will hope) how transitory are theories, how insecure the foundations of knowledge, how vastly greater the unknown than the known. He has learnt to handle a test-tube, a scalpel and a microscope; he knows something of the complexity of animal structure, the intricacy and mystery of its workings, the ways in which it may be expected to react to stimuli. He has been in fairly close contact with a large number of patients, he has learnt to take a history and to make a physical examination of the more easily accessible regions of the body. He has seen many obscure systemic diseases investigated and diagnosed, and a few common ones; he has attended at a great many abdominal operations, and performed a very few minor regional ones; he has skimmed through certain of the special departments, but has thought them to be, as their name seems to imply, rather the province of specialists. He has perhaps caught a glimpse in passing of the massage department, and has wondered what exercises are performed with the help of that rather exciting-looking gymnastic apparatus; he believes there is something called electrical treatment which you order in cases of paralysis, and he knows there is something called good nursing which is of importance in pneumonia and typhoid.

His year as a house man has probably taught him more, from the practitioner's point of view, than the preceding two years put together; and let us grant at once that if he has time and money enough to be in turn house physician, house surgeon and the house officer of a special department he will be a well-educated doctor; but this can happen only to the few and he is fortunate if he can hold one appointment at his own hospital. Even this is not quite pure gain, for at least in some, and I suspect in many hospitals, there is a tradition that the house man shall regard himself as already a specialist. Is he a house physician? Acute abdominal pain is scarcely his province. A house surgeon? The chest is not his department and he disdains the stethoscope. Is he either of these? The state of the tympanic membrane is hardly a thing you would expect him to investigate. These fictions may even form the basis of a kind of game, a sort of many-cornered tennis in which the patient is the ball. Many of us must have played it, in the days of youth, many of us must have heard from patients that it is still in vogue; but it is a bad game, for apart from the tribulations of the unfortunate ball, it is very bad for the players, whether they play in after years an all-round or a special game, and it is not too easy to get rid of the narrowly specialised outlook which is apt to be formed at this time.

At long last the young man bids a final farewell to examiners, teachers, medical school, and resident quarters, and enters on the independent practice of his profession.

The Limits of the Normal.

There are, of course, many varieties of medical practice and their requirements differ. I will try to confine myself to criticisms which are at least widely applicable, though they may apply rather more to general than to specialised kinds of practice. The notorious complaints that the student is not well trained in practical midwifery and knows little of what is called infant welfare need not be pressed home in detail, for they are but part of a much wider accusation which may be made. The young practitioner, if he is at all self-critical and observant, will find, and will keep on finding, that he knows lamentably little of normal men, women, and children and their bodily functions, and this in spite of the years he has spent in studying anatomy and physiology, intended presumably to teach him this very thing. This truth I began to perceive within a few months of qualifying, when I noticed (as did others) that a large number of army recruits had pulse-rates much in excess of what I had been taught was "normal" but suffered no inconvenience from their tachycardia; and it was last rubbed into me a month ago when I learnt from a patient, with a chart to back the statement, that the body temperature in women rises half a degree or more above normal in the week preceding menstruation. (This, she told me, is common knowledge in sanatoriums.) In the intervening years my conception of the limits of the normal has been constantly widening and my respect for the power and influence of personal hygiene constantly increasing.

The trouble is that the anatomy we learn is a cadaverous anatomy and the physiology a laboratory physiology, but little of it strictly human and none of it clinical. The student goes not only into the wards but into practice quite unfamiliar with the clinical aspect of normal human beings. He does not know how they grow up or how they grow old, on what diets they can live and thrive, what are their

requirements in the way of sleep, exercise, and clothing, and what effects on their bodily functions may be produced by different mental and physical environments, occupations, and habits. This is partly because experimental clinical physiology is as yet in its infancy and much of what might be discovered is still unknown, but it is partly because what knowledge there is is not collected and taught. If he has at all considered anatomical and physiological types, it is only in terms of that precocious and airy science called endocrinology; it has never been hinted to him that he will have, as a matter of daily practice, to try to separate what is inherited and constitutional in a given clinical picture from what has been acquired. It may be said this is an obscure and difficult subject, but so are biochemistry, bacteriology, and the aforesaid endocrinology, to all of which he is invited to apply his poor wits.

All of us must have seen many times cases in which some anatomical peculiarity, some postural fault, or some disorder of function due to a lack of harmony in or around the patient has been diagnosed as an organic disease to the detriment of the patient and the discredit of the profession, and I cannot help thinking this will continue until a course in clinical physiology is introduced into the curriculum in which the student will see and examine as many different kinds of normal human being as can be collected for demonstration.

The Mind and its Disorders.

Closely related to this is the neglect of psychology. There are a few signs that this is beginning to be rectified, but I think it would be hard to deny that the present tendency of medical education is to send the young doctor into practice a more or less conscious materialist.

Almost the only teaching the young man receives about the mind concerns its extreme and gross disorders. So much is this so that the word "mental" has in common speech become almost inverted in its meaning, and when a nurse announces to us with bated breath that "she really thinks the patient is slightly mental," we understand her to mean not that he has glimmerings of reason or that his mind is having a slight influence on the course of the illness, but that he has lost his reason. Further, it is only with the utmost caution that we can speak to a patient about his mind (calling it by its name) unless we want him to think we suspect him of insanity. This, I believe, is because for some time past it has been vaguely but generally understood that medicine was not on speaking terms with the mind—cut it dead when they met and had been heard to say that it did not exist. This trouble must go back some way. "Canst thou not minister to a mind diseased?" asks the distracted Macbeth of his wife's medical attendant, obviously expecting the answer *no*. Sure enough he gets it. "Therein," says the doctor, rather shocked at being asked, "the patient must minister to himself." "Throw physic to the dogs," says Macbeth, "I'll none of it." A very intelligent sentiment, for a physic which cries off as soon as mind is mentioned is worth but little to the human patient, though it may be useful enough to the canine.

As a philosophic theory we may, if we like, argue, or even believe, that mind is not, that thought is only the tune our brains play when stimuli strike their keys and that its quality is determined by the ductless glands. But whatever its ultimate value—and I think it much too facile and shallow-seeming to be true—such a theory is in practice a bruised reed on which if a man lean it will go into his hand and pierce it. The word *mens* was not invented for nothing, and there is no fact which more obstinately confronts us in practice than the fact that our patients have minds, that with their minds we have to deal, and that we overlook or disregard them at our peril and theirs. Many come to us frankly because they are anxious or afraid; another large group complain to us of symptoms demonstrably due to anxiety, unhappiness, or social maladjustment; the ailments of others, trivial in themselves, acquire a large importance from the charge of fear which they carry; and of the rest, perhaps a minority, who have frank organic disease, it may be said that the course of their malady will always be influenced and sometimes determined by their mental attitude to it. Only when a patient is deeply anæsthetised may we for a moment forget his mind, perhaps not even then.

This plucking from the memory of rooted sorrows, disdained by Lady Macbeth's physician, is a task we are asked to attempt far more often than to pluck a malignant growth from the rectum or even a sebaceous cyst from the scalp. It is not an easy task, but it can be attempted and with much better hope of success if we have learnt something of the natural history and behaviour of rooted sorrows and what means are available for their evulsion. The doctor of Dunsinane lost his distinguished patient a few days later, her husband remarking, again rather shrewdly, "she should have died hereafter."

It is quite true that the subject is not an easy one to teach and that the wards of a hospital are not the best place to teach it in; but it is a subject which lends itself better than most to the method of teaching by lecture, and the medical casualty department of every hospital teems with examples of the common neuroses some of which the student might, with great advantage, be set to diagnose. Even if he got no further than to demonstrate to his own satisfaction that some kind of anxiety or fear was the cause of the symptoms he would have learnt much, and from time to time a specific cause for the trouble might be discovered even in the out-patient department and perhaps be dealt with or removed. At present I think it must be admitted that the much-abused word "functional" is suffered to pose as a diagnosis, and, what is worse, to carry with it the implication that none but palliative or placative treatment is indicated. The time, I hope, will come when the word "functional" will no longer be employed as a polite synonym for "psychogenic," and when it will be recognised that though organic changes in the tissues must often be irremediable a disorder of function should be rectifiable.

Function and Structure of the Curriculum.

One more defect in the curriculum must, I think, have come home to many of us. The student who is preparing himself for general practice may not unreasonably suppose that it is in the so-called general wards and in the departments devoted to undifferentiated medicine and surgery that he will find the kind of case he will most commonly meet in practice, and that the special departments are chiefly of interest to those who propose to specialise. The curriculum and the examinations both tacitly support this view. When he comes to practise he finds that whereas general systemic diseases and abdominal catastrophes are uncommon, diseases and disorders of the ear, nose, throat, skin, eye, and limbs, to say nothing of diseases of children and disorders of women, occur every day. Could we have our time again I fancy many of us would allot it very differently.

But it is easy to multiply criticisms. Is it possible to sketch out a revised curriculum? Could the practitioner conspire with Fate or with the Conjoint Board or any other of the gods who control our educational destinies, how would he set about the remoulding? This depends, of course, on what view he takes of his own functions.

"There are men," said R. L. Stevenson, "and classes of men that stand above the common herd: the soldier, the sailor, and the shepherd not unfrequently; the artist rarely; rarelier still, the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilisation; and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are

more important, Heraclean cheerfulness and courage. So it is that he brings air and cheer into the sick-room, and often enough, though not so often as he wishes, brings healing."

It seems that the Emperor Napoleon had, as personal physician, one Corvisart, for whom he had a high regard. "Medicine," says Corvisart, "is not the art of curing diseases; it is the art of treating them, with the hope of curing them, and of soothing and satisfying sick people." "The doctor," he says again, "ought to be on his guard against the itch to explain everything. He ought to know that Nature, hidden in most of her works, is especially so in diseases." Both these writers emphasise the fact that medicine is an art; Stevenson contrasting it with a trade, Corvisart with an exact science. Corvisart's reflections are the more apposite to my present purpose, but Stevenson's high praise is worth noting, if only because it shows for what we are most valued by some at least of our patients. We should be surprised to find such things said about us in these days of scientific medicine. The point I wish to make is that medical practice, whatever may be said of medicine, is an art, an art and a craft, not a science; and though many may run to and fro and knowledge be increased, an art it will and must remain. We are of value to our patients most for what we are (and here no curriculum can help us), next for what we can do, somewhat less for what we know, and least for what we can, or think we can, explain. Research, as has been lately pointed out, whether in the laboratory or at the bedside, is only to a limited degree compatible with any kind of practice. Either of them is able to absorb the time and energies of any ordinary man, the aims and methods of the two, and the intellectual qualities and mental outlook they require are diverse and often conflicting.

New facts and new remedies will continue to be discovered in the laboratories and new theories formed there; they will be handed out to the practitioner who will receive them, let us hope gratefully enough but with a certain scepticism, "doubting," like Corvisart, "the value of a drug (or other remedy) to which many virtues are attributed, especially if these virtues are of an opposite character"; he will weigh them in the scales of reason and experience, try out those which have the air of truth, dispense that which proves good and reject that which proves worthless. The last word as to worth and truth will generally lie with him. The day is far distant when the wise patient will apply direct to the scientist for diagnosis or treatment.

What Should be Taught.

The curriculum of my hopes, the good practitioner's curriculum, will lay more stress on experience and less on learning; it will impute far more value than at present to technique and skill of hand; it will be far more discriminating in its choice of facts to be learnt, and will be chary of teaching any theories at all.

The young man in this golden age to be will attend few lectures, for they will be strictly confined to matter not to be found in books; he will learn an anatomy imbued with a sense of proportion, paying regard to what is clinically important and what is not; an anatomy, too, constantly mindful of the relation of structure to function. It will be made quite clear that certain anatomical facts which experience has shown to have little or no clinical value are not to be memorised and will not be asked in examinations, and the list of these facts will be long. Thereby some justly famous mnemonics will perish from the earth, but we cannot have everything. Lest this lead to slovenliness stress will be laid on good and careful dissection and far more marks will be given for the practical than for the written examination. Radiographic anatomy will be studied at the same time as anatomy "in the round"; the student will learn the anatomy of fractures and dislocations while he is dissecting the limbs and will visit the post-mortem room while he is exploring the thorax, abdomen, and brain.

The judicious pruning of physiology will be a more difficult matter but here, too, it should prove possible to eliminate the memorising of many unimportant facts, and of names, bygone experiments, and exploded theories, and to make room for that course in clinical physiology of which I have spoken. The tiny seed of this course is to be found already in the curriculum where the student of physiology is required to learn the use of the ophthalmoscope, the perimeter, and the sphygmomanometer, but the seed is an unconscionable time in germinating. When it does at last put forth its leaves and fruit he will learn to make a complete clinical examination of healthy subjects and to record the results, employing not only the ophthalmoscope but all such "scopes" as may be reasonably employed in health as well as his unaided senses. The work done will resemble in part the work of child welfare centres, in part the examination of candidates for life insurance or recruits for the Air Force, and it will be combined with research into the limits of the normal. This course should serve to bridge effectively the gap, at present so awkward to negotiate, between the class-room and the wards. There will be no shock in the change, no temptation to forget what has been learnt, little to learn in the examination of sick patients, and much less danger of mistaking the unusual for the pathological.

In his clinical years our student will spend more time with patients, less time in the museum, the library, and the laboratories, and very little time in the operating theatre. He will be taught that while he cannot be expected to know all about his patient's disease he must know all about his patient. At every stage of his career he will be prohibited from specialising; in vain will he disclaim all knowledge of heart or lung in a surgical, of ears and nose in a medical, ward; he may not know what is wrong with them but he must examine them and report what he sees and hears. The special departments will be commended very strongly to his notice. He will attend a fracture clinic and work in it with his own hands; he will learn to pass the Eustachian catheter, to perform a myringotomy and to wash out an antrum; he will learn to put a limb in plaster and something of orthopædic shoemaking, and will himself practise remedial exercises; he will apply a starch poultice to an impetiginous head and Unna's paste to varicose ulcers; he will perfect himself in the art of bimanual palpation of the uterus; he will write a diet sheet for a child with rickets and another for one who has bilious attacks; he will be attached as clerk to the casualty physician and write his prescriptions for him in full; he will inject varicose veins and piles and give transfusions of blood.

All these accomplishments and many others like them could be taught at least as easily and as safely as the giving of anæsthetics or the conduct of labour. All are of more value in practice than much of the book-learning which now so largely supplants them; is not even the meanest of them of more use, as between doctor aud patient, than any knowledge of the properties of suspensoid and emulsoid colloids which the student is likely to acquire or to retain? All are at least embarrassing and at most impossible to acquire in the world outside, yet I think it must be agreed that the student who has learnt these things in hospital has had rare good fortune.

At his final examination our student will not be dumbfounded if he is asked to describe the common types of dyspepsia, their ætiology and treatment; a question on tonsillitis, on influenza, or acute otitis media in a child will not surprise him, nor will he think it unfair to meet as a "short case" a patient suffering from sciatica whose dental radiograms he will be expected to demand and whose antra he will be wise to trans-illuminate.

In a still more golden age the student will be marked like a schoolboy on his term's work and examinations will become relatively unimportant; their written parts, I think, will largely disappear, and the practical and viva voce examinations will be

planned to test thoroughness in examination, clinical experience, and acumen, manual dexterity and perhaps even skill in handling garrulous, reticent, or otherwise difficult patients. But without any such revolutionary change I suggest that a student taught and trained in the way I have tried to outline would be likely to prove, in plain English, a better doctor than one trained in the present régime. He would be less tempted to cry out in every crisis for help from a laboratory test, from a complicated diagnostic machine, or from a specialist; he would be better able to stand up as a man should against that brown and sticky torrent of false science which pours unceasing through our letter-boxes; less burdened with the findings and the theories of the sciences he would have at heart more of the spirit of a scientist: best of all, he would be of far more value to his patients in their troubles and would rise both in their esteem and in his own.

WHITAKER 1931.

THE 63rd annual volume of the Almanack first issued by Joseph Whitaker, F.S.A., in 1868, contains the astronomical and cosmic data with which the year-book was started, the value of which the average reader may be apt to overlook, for grafted on to it is a vast amount of information respecting the government, finances, population, commerce, and general statistics of the various nations of the world. We have taken this description from the familiar title page with the zodiacal signs and seasons, as it cannot be bettered. The editor-in-chief of the Almanack tells us he has used many suggestions made by correspondents and expresses gratitude for favours to come (perhaps he would insert our present address correctly); but it would require a very bright boy or girl to find an omission in the 1931 Whitaker, although it would do him (or her) good to try, and incidentally he (or she) might get mentioned in 1931, for was it not Miss Venetia Burney, aged 11, who proposed for the newly discovered planet the name Pluto, which has been accepted by the trustees of the Lowell Observatory. No one would go to the Almanack for medical information, but there is a useful classified summary of metropolitan hospitals (pp. 400–406), and in the advertisement columns there are many entries under hospitals and institutions, to which the proprietors have added the kind note "The hospitals and institutions given in this section deserve the heartiest and most generous support it is possible to give." The Almanack is published in two editions, one bound in red and green cloth, containing 960 pages, at 6s., the other bound in orange paper cover, at 3s., which omits information about colonial and foreign countries as well as the annual summaries which form so interesting a feature of the larger work.

NEW PREPARATIONS.

QUINISAN (Messrs. Howards and Sons, Ltd., Ilford) is a new quinine salt—the bi-salicylosalicylate—which is identical with the U.S.A. quinisal. It is a definite combination of quinine and salicylic acid forming a crystalline powder which is insoluble in water, but which separates into its constituents in the stomach and intestines. The firm has received considerable medical evidence that the preparation has been valuable in the treatment of catarrhs, influenzal or otherwise, and early tonsillitis.

(1) NORMACOL, (2) RAMINAL (Messrs. H. R. Napp, Ltd., 3 and 4, Clement's-inn, Kingsway, London). (1) This preparation is an intestinal evacuant of vegetable composition, and mild in action. The manufacturers adduce, as a test of its bulk-forming and emollient character, the fact that one teaspoonful of granules will absorb five ounces of water in about four hours, with the result that a gelatinous mass is yielded. The sample received by us does not claim to be a novelty, but the manufacturers point out that considerable improvement has been effected in its flavour, and this is a distinct point to its advantage. The dose, as given on the supply tins, is from one to two teaspoonfuls for the adult and half that quantity for the child, but the wise instruction is included that, while the quantity may be increased if required, the dosage should be regulated by the doctor.

(2) Raminal will be sent free of charge to medical practitioners who may desire to make a trial of it. It is a blend of theobromine calcium salicylate with chlorophyll and phosphate of iron, and its components indicate the particular action it may be expected to have in anæmia and hypertonic conditions. It is supplied, to the medical profession only, in boxes of 50 tablets.

THE PRINCIPLES OF DIET.

A NEW and revised edition of Lindsay and Mottram's "Manual of Modern Cookery" (London: University of London Press. 1930. Pp. 316. 4s. 6d.) contains an introduction to the principles of diet which should enable anyone who uses the manual to do so intelligently. Left to himself, it is stated, the average person of means takes a diet which, as regards its chemical composition and energy value, is constant throughout temperate regions; nevertheless, although instinct may be a wise guide, grave dietetic faults are often committed by the sanest of people. The commonest example of this is seen in the results of upsetting the balance between fats and carbohydrates. If we take too much fat or too little carbohydrate our health is promptly upset; malaise, nausea, and actual sickness may result; or we suffer from trouble which may be vaguely diagnosed as biliousness or sick-headache. Intelligent users of this manual will not err thus. There are, it is added, more than hints of a necessary balance between protein and vitamin B, between protein and calcium, and between cereal foods and vitamin D. The question arises, is this recognised by those who prepare our meals? and the remainder of the chapter is an answer to this inquiry. The chapter on the principles of cookery is of equal value, and each of the remaining 250 pages of the book contains three to six clear concise descriptions how to prepare almost any kind of food. A table of contents at the beginning makes reference singularly easy.

Births, Marriages, and Deaths

BIRTHS.

ANDERTON.—On Dec. 9th, at Moresby House, Hindley, Lancs., the wife of Dr. Reginald Anderton, of a daughter.

DOUTHWAITE.—On Dec. 10th, at Harley-street, W., the wife of Dr. A. H. Douthwaite, of a daughter (stillborn).

HOUGHTON.—On Dec. 10th, the wife of L. Wynn Houghton, F.R.C.S., Elvyne, Berkhamsted, of a son.

SALISBURY.—On Dec. 7th, at Woodlands, Billing-road, Northampton, the wife of Walter Salisbury, M.D., M.S., F.R.C.S., of a daughter.

MARRIAGES.

MAYBURY—LYALL.—On Dec. 11th, at St. Giles's Cathedral, Edinburgh, Bernard Constable Maybury, F.R.C.S., to Isobel Wilson, elder daughter of Mr. and Mrs. George Lyall, of Torbruad, Turriff, Aberdeenshire.

DEATHS.

DESPARD.—On Dec. 8th, at Yarmouth, Isle of Wight, Rosina Clara Despard, M.D.

FAIRBANK.—On Dec. 9th, at George-street, Hanover-square, W., John Fairbank, M.R.C.S., aged 85.

GARDINER.—On Dec. 9th, at Dunmow, Joseph Napier Gardiner, M.D., F.R.C.S., L.R.C.P., aged 59.

MACK.—On Dec. 11th, at Windmill-avenue, Ewell, Surrey, Hans Hamilton Mack, B.A., L.R.C.P., of Sydney, N.S.W., aged 69 years.

NIALL.—On Dec. 12th at "Kinkora," New-road, Chatham, William George Niall, M.D., M.Ch. R.U.I., aged 68 years.

PINTO-LEITE.—On Dec. 12th, at Fellows-road, N.W., Dr. Hubert Pinto-Leite, aged 51.

STIDSTON.—On 15th inst., Charles Algernon Stidston, D.S.O., M.D., beloved husband of Olive Stidston, of 14, Waterloo-road, Wolverhampton, aged 49.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

GIFT OF A HOSPITAL.—An anonymous donor has offered to defray the cost of a new hospital at Driffield, East Yorkshire. The site was given and a tender of £8000 has been accepted.